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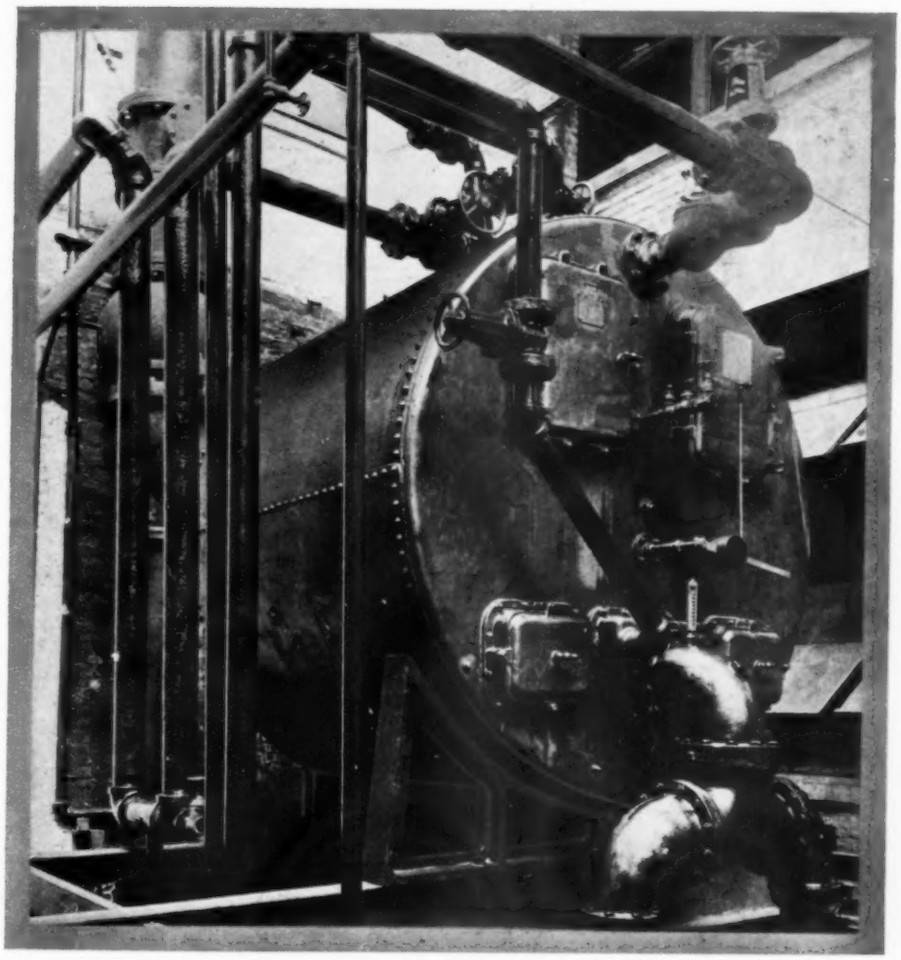
Editorial Index Page 37. Advertisers' Index Page 90.

AMERICAN ARTISAN and Hardware Record

Vol. 87. No. 25. 620 SOUTH MICHIGAN AVENUE, CHICAGO, JUNE 21, 1924. $2.00 Per Year



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Thoroughly Covers the Warm Air Furnace Sheet Metal, Stove and Hardware Interests

AMERICAN ARTISAN and Hardware Record

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INVITING YOU!

The editorial columns of AMERICAN ARTISAN are devoted to the development and perpetuation of the Warm Air Heating, Stove and Range, Sheet Metal and Hardware industries. Its readers are cordially invited at all times to use this commonsense method of obtaining the advice they need for the successful conduct of their business.

If your problem is a knotty or technical one, submit it to the Service Department and secure the benefits of the opinions of other men. It is an exchange information department, and you are asked to relate your accomplishments and tell how you have surmounted difficulties. Wherever possible rough sketches or photographs should accompany the questions or suggestions, as they always make clear the points involved. Use this Service Department freely; it is yours.

Answers to all questions will be held strictly confidential if so desired by the sender. If no mention is made to the contrary, questions and answers will be published in the various departments of AMERICAN ARTISAN.

ALPHABETICAL INDEX AND CLASSIFIED LIST OF ADVERTISERS, Pages 90-92-94.

THE SUPER-SMOKELESS FURNACE

Why are SUPER-SMOKELESS Furnaces The Most Profitable for Dealers?

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SUPER-SMOKELESS Furnaces are most satisfactory from the standpoint of the user. They burn the cheaper grades of soft coal not only without smoke, but with great efficiency. Smoke and soot are burned as valuable fuel of exceptional heating value. SUPER-SMOKELESS Furnaces are cleaner, require less coal, and generate more heat than other furnaces of equal size firepot. Consequently home owners are more than pleased with them.

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THE SUPER-SMOKELESS FURNACE

Caveat Emptor Is a Poor Foundation on Which to Build Any Business.

Editorial of the Week

THE Better Business Bureau of the Associated Advertising Clubs of the World has been instrumental in stopping some dishonest retailers and manufacturers from imposing on the buying public in certain specific instances in certain cities, but in spite of the good work done by the Bureau the fact remains that in altogether too many cases the crooked manufacturer and the crooked retailer not only are allowed to continue in their dishonesty, but are actually encouraged to do so by the increased profits.

The principal reason for this condition may be found in the fact that the average man—whether he is in business or is one of the consuming class matters not—is not inclined to take the trouble to "show up" the crook who defrauds him by misrepresentation. If he is a competitor of the crook he may complain in meetings, or he may endeavor to counteract the crook's claims with the customers who mention them to him, but so far as going after the crook and making him quit, that is quite another matter. If he is a consumer, the extent of his resentment will probably show itself by withdrawal of his patronage from the crook's store, but the latter bothers little about that, for "there is one born every minute."

This matter of misrepresentation or selling of spurious imitations is really one of supreme importance to the honest merchant and the honest manufacturer—of far more importance to them than to the consumer—and there is just one alternative to their decision as to action or inaction.

This alternative is federal and state legislation which may stop such misrepresentation, in printed statements and by word of mouth, but which is also certain to make the conduct of an honest business more costly and more restricted.

For while the consumer may not be willing to go to any personal trouble to "show up" the crooked retailer or manufacturer, he is nevertheless a voter and as such can be catered to by the wily politician who figures that he can make capital for himself by "standing up for the rights of the people," and the first thing we know there will be a law on the statute books which will be altogether too stringent for comfort.

Now, then, what can be done by the honest retailer and the honest manufacturer?

In the first place, the honest retailers in any community can make it so uncomfortable for the crook in their town that as a matter of self-preservation he will stay on the straight and narrow path, and they can do it without running any risk of having to fight libel or damage suits, nor will a campaign of price-cutting be necessary in the process of successful elimination.

In the second place, the honest manufacturer can discountenance misrepresentation by his own salesmen by discharging on the spot any of them who are caught at it. He can also keep his own sales organization posted on misrepresentations made by dishonest competitors and instruct his salesmen as to the proper means of "showing up" such dishonest practices.

But in the long run the biggest part of the work must be done by the retailers in the various communities—all of those who can rightly claim to do business on honest principles.

They are the men most vitally affected and by them the wheels must be set in motion and kept in motion.

It is not only a matter of protecting their own interests, but for the greater matter of making it safe for the consumer to buy whatever he may need and want in the community where he lives—no matter from whom he buys.

Random Notes and Sketches.

By Sidney Arnold

I had a nice visit with R. W. Glaser, who is a successful sheet metal contractor in Burlington, Wisconsin, because he knows his business and is not afraid of spending money to keep posted on all that pertains to his business. He came in to buy some new books that we have on cost accounting on heating and ventilating and on skylight work.

* * *

"Some people are inclined to exaggerating and adding to statements that have been made to them when they repeat the story," said R. A. Gulick, of the "Ath-a-nor" furnace folks, while I was visiting with him in his office at Newark, Ohio. "They are like some salesmen that I know, who do not seem to be able to make a straightforward selling talk, but must make claims that are not in accordance with the facts of the case," and then he told this story:

Mrs. Scrubbs, whose highly colored imagination was well-known in her neighborhood, was called as a witness in a damage suit.

"The evidence which you will give to the court shall be the truth, the whole truth, nothing but the truth," said the clerk.

"Yes," quavered Mrs. Scrubbs, now thoroughly frightened and unable to think of one word of the story she had resolved to tell—a story in which she was the heroine.

"Well," asked the judge, "what have you got to say about the case?"

"Well, judge," she replied, "with the limitations I've just had put on me, I don't think I've anything at all to say!"

* * *

W. W. Chalk, who looks after the records of the Michigan Sheet Metal Auxiliary when he has nothing else to do, and he is busy most of the time selling supplies for the W. J. Burton Company, was leaving the hotel at Lansing the other day with a friend who had just spoken to a tall, lean, lanky fellow whom "W. W." did not know.

"Who was that Englishman you just spoke to?" said he to his friend.

"How did you know he was an Englishman?"

"By the way he dropped his 'H's.'"

"That is nothing," said the friend. "You ought to see the way he drops his 'I. O. U.' I have several of them."

* * *

"Newt" Pierson, who runs the Detroit office of the Armeo people, was at the Michigan Central station the other day when a rather plump young lady, quite out of breath, rushed up to the window and bought a ticket for Pontiac. Between puffs she asked the agent:

"Have I much of a wait?"

"Well," he replied, "I should say about a hundred and ninety."

* * *

"I can sympathize with the minister in a story I heard the other day," said W. A. Brown, the old-time sheet metal contractor in Marion, Indiana, and then he told me the story:

"Father," said the minister's son, "my teacher says that 'collect' and 'congregate' mean the same thing."

"Perhaps they do, my son," replied the clergyman, who had had a great deal of parochial experience, "but you can tell your teacher that there is a vast difference between a congregation and a collection."

* * *

F. S. Gottschalk, the square set Utica Heater salesman, was in a grocery store down in Indiana buying some crackers and cheese for his lunch when Jake, a worthless, improvident fellow, came in and said to the grocer:

"I gotta have a sack o' flour; I'm all out, an' family is starvin'."

"All right, Jake," said the grocer. "If you need a sack of flour we'll give you a sack. But, see here, Jake, there's a circus coming to town in a few days, and if I give you a sack of flour are you sure you won't sell it and take your family to the circus?"

"Oh, no," said Jake. "I got the circus money saved up already."

* * *

"Some people put me in mind of a merry-go-round," said Charlie Hauck, the Springfield, Ohio, hardwareman and sheet metal contractor, to George Dietz, the president of the Ohio Sheet Metal Contractors' Association, while discussing the proceedings of a meeting they had attended in another Ohio city. "They never seem to get anywhere, no matter how much they talk," and to emphasize his remark he told the following:

After many conferences had been held by the board of directors of a small town bank about buying a new water cooler, a grouchy old member had this to say:

"Gentlemen, before we adjourn, I move that our next conference be held on a merry-go-round."

And, as they looked at him in astonishment, he added in explanation:

"We never get anywhere."

* * *

"In extreme cases there is no telling what may happen," says Ernie Liessman, who sells Mueller warm air furnaces besides being president of the Wisconsin Sheet Metal Auxiliary, and then he sends in the following clipping:

In order to make their campaign promises good, a certain administration in a western town began a half-hearted attempt to bring one of their numerous lawless gangs to justice. The prosecuting attorney became unduly enthusiastic and things got altogether too hot.

Said one member of the gang who had been absent from the proceedings:

"I hear as how the boys shot one of their own witnesses in court the other day."

"Yep," was the answer. "The lawyers was a-gittin' him rattled, so we just had to shoot him."

Basement "Dos and Don'ts" for Furnace Installers at Work in Private Dwellings.

How to Properly Install a Furnace and What to Remember in Doing the Work.

INSTALLING the furnace. A most compact, comprehensive and complete treatise on what and what not to do when installing the furnace, beginning with the unloading of the furnace and ending with cleaning up after the job is done, by L. W. Millis, secretary and treasurer of the Security Stove and Manufacturing Company, Kansas City, Missouri, given at the meeting of the company's Warm Air Study Club, conducted by Mr. Millis.

Recognizing the need for more intelligent detailed information on the actual installing of a furnace, Mr. Millis has set forth in his lecture for readers of American Artisan the numerous problems met with during the progressive stages of the installation work, explaining their causes and effects and verbally illustrating tried methods of correcting defects.

In this way readers of American Artisan throughout the country enjoy the exclusive privilege of the benefits derived by the Security Stove Company's Warm Air Study Club, minus only the added good effects of personal contact with the conductor.

Of course, the furnace should be set level. If the cement floor slopes, the ashpit should be shimmed up level by using pieces of stones or bricks and a little cement should be put under it. Pieces of wood should never be used nor should sawdust or wooden splinters be left inside of casing or air duct. They are certain to give odors of burning wood. They may make visible smoke, and often have caused runs by fire department. But, in any even, they always cause a run-back on the job.

If there is no suitable foundation there should be one provided before proceeding with the work. Never set the furnace on a dirt floor no matter how solid it seems. At some future time water may run into the basement, causing trouble. Never set furnace on a wooden floor. A base of hollow tile covered with bricks makes a satisfactory base on a wooden floor.

Do not set furnace where drayman happens to leave it. Examine your material. Picture in your mind how all parts of the job—duct, air runs, cleanout connections, smoke pipe, water pan, water coil and fuel bin—will fit together.

Put Portland cement around inside of base ring so no air (with dust, ashes and smoke) can pass into casing under the ring. Cement is especially needed at the base of pipeless furnaces, as any air admitted anywhere, except through the duplex register, interferes with the downward flow of the air.

Asbestos cement will stick to castings better if there is no dust in joints or on castings. They should be brushed carefully. On repair jobs the cement grooves and opposite castings should be slightly (only slightly) moistened. New castings should not be moistened. With your fingers rub cement carefully into surface of joints of castings and fill cement cups with the cement. Set castings in the cement so they will settle to bottom of groove. Do not twist castings after setting. After castings have settled to bottom of groove, the asbestos cement should be carefully smoothed or pointed up around all joints and at all points in the joints with fingers. Be careful to press cement tightly so no air bubbles are left in cement. Cleanout connection, smoke connection, feed door and ashpit door frames should be cemented with the utmost care. Smoke connections should have a nail or bolt (without a nut) in same so they cannot be jarred loose, but so nail can be taken out when necessary.

After furnace and casing is set, and before cold air shoe or boot is connected, clean the cement floor around base and make quite a few rough spots on the face of floor. Put a few little spalls of stone or brick under base ring and let them project at various angles. Wet the floor and apply the mortar around base in a neat manner. Have cement and sand thoroughly mixed while dry. Use enough water to wet every particle in the mixture, but not enough to make it sloppy. Too much water weakens cement. If there are any rags about the place, dampen them and place on cement so it will harden slowly. No one knows why cement sets, but we know it is not simply a drying process. It is a slow cemical action and is aided by a little moisture and exclusion of dry air and by time. The slower the action the stronger the finished cement will be.

Warm air pipes should be run as directly as possible from canopy to register or stack boot. Do not oval the pipe so its capacity is cramped. Ovaling a pipe always reduces its capacity. An 8-inch pipe ovaled only passes twenty-seven inches. A 12-inch pipe ovaled passes eighty-five inches only. A 20-inch pipe ovaled passes two hundred and twenty-eight inches.

Avoid abrupt bends—every 90-degree angle is equal to about five feet in length of pipe in retarding air flow. However, a pipe only three or four feet long should not

run direct enough for the heat rays from the castings of the furnace to shine into register box or against wooden timbers. Remember that radiant heat passes through air without loss and partly so through thin metal. Always put a goose-neck in such pipes. If a pipe passes through either a stone or brick wall, do not allow it to touch the wall. The wall absorbs heat from the pipe and sometimes, in a long flat pipe, stops the flow of air entirely. Use a collar, leaving some space around pipe, or else leave a hole in the wall so the cold air beyond wall will flow out and warm air flow in. Never allow a pipe to run down hill at any point. If rectangular pipes must be used, they should if space will allow, be larger in cross section area than the round pipe.

Casing collars should be placed so tops of collars of all are even on canopy, and should be stripped with asbestos so air cannot leak out at dove tailing. If possible, avoid placing a collar over feed door. Do not be deceived in this because it is hot to the hand at that point. Little air flows past that point to carry the heat away.

If pipes are jumped, use a uniform pitch and also a uniform length of pipe between centers of elbows and collars. When wiring a warm air pipe in place care should be taken to securely fasten it in its natural line and so it cannot swing. One turn of wire around the pipe with a spread of eighteen to twenty-four inches where wire is fastened to joist is a very good way. Pipes should not be fastened to water or gas pipes, because the latter may be changed or removed, allowing the remaining pipe to sag or fall.

Dampers—Warm air dampers should be put fairly close to furnace and handle should be put at bottom of pipe, or a little to one side, so the damper will "stay put" and also so handle will be cooler. But if duct or smoke pipe makes it difficult to reach damper it may be put farther from furnace if it can be reached easier and is visible.

In setting side wall register boxes, always be sure that you know the proper height above floor. Do not drive nails through sides of register boxes. Be sure that wooden blocks are firmly fastened alongside of register boxes so the register screws will reach them. Never use nails to fasten registers on. Use screws. No register box is tight enough to prevent air from leaking around box and back of registers and depositing dust on the comparatively cool wall paper. Use 2-piece registers, so you can always put strips of asbestos at connection of register box and register to stop the air leak. It should *always be done that way*. If you paper them properly, dusty air cannot strike wall paper. It also helps if the register is drawn up tightly against wall. The dust "floculates" on the wall paper. Sometimes it is possible to reach up through a first floor boot and paper connections on an old job. Always set a floor register so the blades or louvers throw the air away from, never toward, a wall. It will certainly discolor paper on the wall if set wrong.

Cleanliness—Don't touch woodwork or wall paper. It is sure to leave ugly marks and lower the selling value of a house.

Cold air ducts—Always be careful to set wood faces, or any other kind, so that they will not give, squeak or creak when stepped on. If it is necessary to build down under face, be careful to have the smallest part of pan or connection fully as large as the area of the duct. The shoe at casing should be dust tight where it connects to casing, especially at the bottom near base ring. The top of the shoe should be approximately at the top of the ashpit, or even lower, and if possible should be placed at back of furnace, so air can flow around both sides of ashpit. If return air is admitted from more than one duct or pipe a piece of metal should be placed inside of casing or shoe between the air inlets so the air must start up the casing instead of working against the air from another duct. Always admit air into casing as low as possible.

This brings us again to the question of dust. If dust cannot get into the duct or casing, it cannot come out of the register. The utmost care should, therefore, be taken to stop every crack or crevice in duct and casing so no air carrying dust can leak into it.

Do not put wooden blocks under a cold air duct where the heat from the furnace can reach it. Never connect to an old wooden duct at a point lower than level with top of the ashpit unless it is at least five feet from furnace, or unless it is an underground duct. If circumstances make it necessary to do so be sure to protect the wood from the heat with metal with an air space between the metal and the wood. Be extremely careful never to leave pieces of wood, splinters or sawdust inside of casing. This has caused many run-backs after fires are made. Also be sure there are no shavings or rags in stacks.

Smoke Pipe.

Be certain the smoke connection at furnace cannot leak smoke, even if the wind should blow down the chimney. Avoid sharp angles and get as much elevation in smoke pipe as possible. Never run it down hill. Put a damper *between* furnace and check, never between check and chimney. Be sure check draft lid rises and falls freely and always drops into proper place. If gas fume pipes or stove pipes are connected into smoke pipe, always try to have a damper in them so they can be shut off when not in use. There should always be a thimble cemented into the chimney to receive the smoke pipe so that contraction and expansion of smoke pipe will not pull cement out of chimney. *All space* between the brick (or stone) and the tile in chimney should be cemented and the thimble should go into the tile *exactly* even with inside edge of tile. All holes in chimney should be closed. No furnace, no stove, no boiler, no cigar can work well unless a good draft is supplied. Any air entering chimney, except through the grates, helps kill the fire. The builder should fix hole properly for smoke pipe, but if he doesn't, or if it is too poor, you make it right.

The flue is most important and must be tight. Be careful not to put smoke pipe too far through thimble. But be careful smoke pipe is not short enough to pull apart or knock down easily. Make some joints firm toward furnace and the balance firm toward chimney. Use a draw band for the remaining joint. Fasten smoke pipe to stay *where you put it.* If wires are used, be sure they do not pull in the wrong direction. Remember a smoke pipe may get soot in it, it may catch fire and the pipe become red hot for a few minutes. (If not this year maybe next year.) Therefore, protect all woodwork, near smoke pipe (eighteen inches away) with galvanized iron, leaving an air space of two inches between wood and galvanized iron.

Draft chains—The draft chains should always work freely and not drag over woodwork or pipes, and the pulleys should be free to line up with chain. Be careful that carpenters leave free space at chains—when they lay the finished floor. Do not use nails to fasten chain plate—use screws.

Asbestos Coverings.

Asbestos paper should always be put on warm air pipes smoothly and present a neat appearance. All warm air pipes should be carefully covered from the canopy to the register box or stack. Every opening, crack or crevice through which basement air can leak into casing or warm air pipes or starters at register boxes, or stacks, or around register boxes, should be carefully covered with asbestos paper. Every crack in return air duct or connection between cold air face and casing should be stripped with asbestos. No basement air should be allowed to carry dust into any part of the heating system. If a furnace is to be covered with air cell asbestos, do not put air cell lower than the top of the ash pit. Be careful to cover sloping sides of canopy with air cell, as well as the top. When the hole is covered with common asbestos it may go clear to the bottom for appearance, but the air will flow into furnace better if that part of casing below level of ashpit is allowed to lose heat. If the smoke pipe passes near air duct it should be covered with air cell or else a piece of metal put between duct and smoke pipe. There should be sand or other non-conductor of heat on every canopy top. On repair or overhaul jobs especial attention should be given to stripping with asbestos all the places where smoke can draw into casing, as well as all places where dusty air can draw in. If casings are jammed in or are off the casing rings replace them—wire in place—and strip with asbestos. Asbestos paper will stick better if both the paper and the substance to be covered have paste applied to them. This also applies to ragged holes in casing where water coils go through. If holes are large, put pieces of metal on, in order to reduce to pipe size, then cover with asbestos. If holes have been drilled in furnace for coils, and coils abandoned always close them. Do not rely on cement, use metal and fasten securely so gas cannot pass into casing.

Many people claim we do not really clean a furnace when ordered to do so. In cleaning a furnace clean thoroughly all smoke passages of every description. Clean the smoke pipe and take out all soot and ashes at bottom of chimney. Close up all bad connections at chimney, smoke connection at furnace and also at cleanout connection. If the furnace has a ring radiator, be sure that the ashes are cleaned out of the neck, connecting the center of the radiator with the ring portion. If the furnace is of the tubular type such as the Prest Tubular, Thatcher, or similar styles, always sweep down the ashes on the ledge around tubes into fire pot. Do not allow soot or ashes to fall inside of casing. If smoke connection or cleanout connection does not extend to casing, rig up something to prevent dirt from falling inside casing. Brush ashes down in all portions visible from feed door. If there is an ash bin, take ashes out of ash pit and fire box and deposit both soot and ashes in place provided. If there is no regular place, ask someone in house where you can put them. If they want them left in ash pit do so and put soot in with ashes. Leave basement floor clean so far as our work is concerned. Do not track soot and ashes around on floor. Have somebody in house know what you have done. When cleaning furnaces of unusual type be careful to know that you really know the line of travel of smoke and be sure all passages are open.

If a pot is to be installed, care should be taken to know absolutely that the radiator or other body portions of the furnace are smoke and gas tight. In practically all cases where new pots are needed the furnace should be remounted.

Care should also be taken to know that gas from ash pit cannot escape into casing, either through ashpit door frame or joints or cracks in ash pits.

If work is to be done on a furnace that has an oil burner in it great care should be taken to not disturb the burner. Different burners are adjusted in special ways with which only the original installer is familiar.

If a furnace is to be cleaned, several thicknesses of paper may be spread over the burner; or better still a rag in such manner that the soot and ashes falling on top of it can be collected and thrown away. Be careful to not open oil valves; or if of the more complicated types, be careful to not interfere with the electrical devices or with the pilot lights or overflow regulators.

Many people who have not used oil burners think they can be used in worn-out furnaces or with poor chimneys. As a matter of fact some oil burners require excellent draft. The odors are especially disagreeable, and great care should be taken to permit no crack or opening in the joints of the furnace.

If a new smoke pipe is to be installed, especially where oil is being burned, it is a good idea to discard sharp angles and 4-piece ells on tees.

Please remember, we are furnace manufacturers and installers and we play no favorites in fuel—soft coal,

anthracite, coke or oil as fuel should make no difference to us. We are vitally interested in having people use our furnace and our services. We should, so far as we know how, assist every legitimate fuel dealer to a satisfactory application of his wares to our product.

Do not put soot, ashes, cement or anything else in drains. Always be sure that grates face properly, and be sure that you know they do—don't guess. If a water pan is to be changed, put it high enough to receive heat from pots, but not high enough to stop air flow. If repair work requires the coil to be disconnected and reconnected, be certain that leaks do not exist. Do not rely on its rusting shut. Do not disconnect gas runs to water heaters. We employ salesmen and examiners and they have already done the talking. Be polite and courteous, but don't talk.

Never touch a tool that you see in basement. If the home owner misses one, his first thought is that you took it and often he will call you and say so. Let them alone. Don't smoke cigarettes in basement, certainly not in basement of an occupied house. You are not interested in "hooch" in anybody's basement. See nothing, smell nothing. If there is material left on a job, pile it in one place if possible and where the pick-up man can find it. Put it all in one place if possible and tell pick-up clerk what is there and if in one place.

One of the first things to be done is to cement the thimble into chimney, if it has not already been done, in order that the cement may, at least, partly set before testing or drying fire is made.

After the furnace is set, build a mild, slow fire in furnace to warm the asbestos cement enough to form a thin film over surface of the cement. If the draft is weak, look for air leaks in the chimney at places other than through furnace.

If all openings are closed, and draft is still weak, test chimney as follows: Make a smudgy fire in base of chimney and when chimney is full of dense smoke, put a wet gunny sack on top of the chimney. If smoke comes out of the cracks in chimney show the owner or contractor, in order that it can be attended to.

If draft is strong, do not allow fire to burn fast, as it will have a bad effect on the asbestos cement.

If the cellar is damp and the furnace set in warm weather, be sure to make a mild fire, as cement is liable to injury if it stands long in a damp place without a little heat.

Remember that warmth is one of the first requisites of life. You are engaged in a branch of endeavor that enables you to serve men, women and children. For thousands of years it has been true that "He who serves best profits most."

Rudy Furnace Company Builds Addition to Factory and Brings Out New Furnace.

President Rudolphi of the Company Will Attend Democratic Convention as Delegate from Michigan.

A E. RUDOLPHI (Rudy), president of the Rudy Furnace Company, left Saturday for New York city, where he will attend the national Democratic convention as a delegate from Michigan. Rudy says: "If you must keep cool with Coolidge, why not keep warm with Rudys."

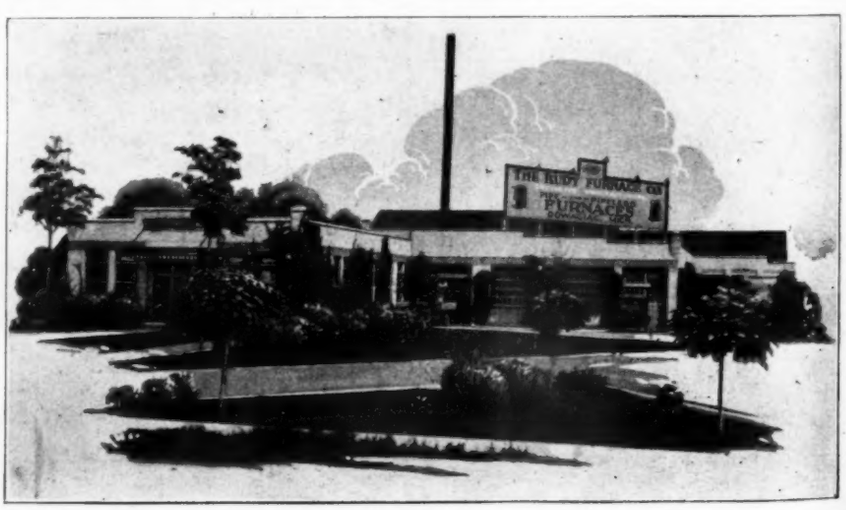
A new epoch in the growth of the Rudy Furnace Company is marked by the addition recently made to that company's plant at Dowagiac, Michigan, which will be completed by July 1st.

This is the fourth addition to the original plant, built in 1915. The new 2-story addition comprises an enlarged cupola room, charging floor, core room and additional storage for raw material. Also a large electric elevator, of the improved Warner type, is being installed.

Upon completion of these improvements, production capacities will be greatly increased. The company has operated full time steadily since January 1st, and they report orders enough on hand to run them well into the fall.

The company's officers advise that to date, 1924, marks the biggest year in both sales and production ever experienced in the history of the company for a like period.

The insistent demand upon the part of their trade for a larger furnace caused the Rudy people to bring out their new "Rudy Giant Heater," a magnified heater of their regular top radiator type with a 29-inch fire pot. The Rudy engineers claim for this funace a



A Section of the Beautifully Landscaped Grounds Surrounding the Rudy Furnace Company's Plant at Dowagiac, Michigan.

warm air pipe capacity of 1,200 inches, and announce that it will be on the market in two weeks.

To the visitor at the Rudy home office, there is a pleasant surprise in store at this time of the year. As one approaches the plant his gaze is met by a beautiful park gorgeously arranged with hedges and perennials, which are now in bloom. Surrounding the offices proper are lawns, flower beds and shrubbery that are a delight to the landscape gardener.

Rudy says: "Tell our friends we will have a bouquet for them at most any time this summer; all they need to do is to make us a call."

E. B. Langenberg Submits Warm Air Furnace Report at Washington Convention.

Outlines Work Planned by Warm Air Furnace Committee and That Already Accomplished.

IN the following article is embodied the report of the Warm Air Furnace Committee delivered before the delegates to the National Sheet Metal Contractors' Convention, held in Washington, D. C., June 17 to 20, 1924:

Events in the progress of warm air heating during the past year have been so rapid that it takes one's breath to even try to realize and comprehend what is going on.

It goes without saying, that warm air heating is attaining a momentum in its development that nothing can stop. To be a part of, to lend our aid to and to share in this health-building, efficient and wonderful business of heating should appeal to the heart of every installer and stir in him a loyalty to the cause that no outside force can disturb.

The setting aside of motives of personal selfishness, for the good of the industry will accelerate development, place the science on a high plane and secure the appreciation of the public. This latter will be your reward, for the good will of the public is reflected in the volume of your sales.

The pleasure of doing a thing well is greater than the reward. The man who watches the clock and waits for payday soon sinks to the level of a drone and in the eyes of men does not even justify his existence.

There are four questions that can well be asked by this organization:

1. What has been done for warm air heating by the American Society of Heating and Ventilating Engineers?

That body of men, composed of highly technical, theoretical and practical engineers, contractors and advisors, has taken an interest in our efforts, as reflected in the discussions of our furnace code.

As you know, a joint code committee worked out formulae covering the installation of warm air heaters in residences. This was not approved by the engineers for nearly two years, for the reason that in the factor for heat loss through outside walls we assumed an average co-efficient of .23. Not knowing that this factor was an assumption on our part and only represented an average for ordinary construction, they very properly withheld their approval. At the annual meeting in New York, in January, 1924, this matter was thoroughly discussed and the proper explanation made and it is indeed gratifying to report that we now have their approval.

This action rounds out some fourteen years of effort on our part to establish a standard for the installation of warm air heaters in residences and this is a proper time for us to show our pride in the accomplishment and our appreciation to the joint committee, who have ironed out all differences of opinion, who have been faithful to the trust that you have placed in them and who are ready to continue their labors for the good of the industry.

If you have pride in this accomplishment and appreciate the work of our joint code committee, will you express yourselves by a rising vote.

We have just marked another milestone in our progress. A mark that will go down in history as a forward and upward step in human development.

The next question we can ask is:

2. What has the National Warm Air Heating and Ventilating Association done for warm air heating?

A body of men, composed of manufacturers, engineers, originators and the producers of the many things that go into a warm air heating plant. Could there be anything greater or more expressive of their good will than the establishing of that wonderful research laboratory at the University of Illinois? Where basic and fundamental laws can be worked out and made exact. Where guess work is eliminated, where positive conclusions can be arrived at.

One can hardly grasp or mentally comprehend the work that has already been done, and as for the future—it is too big to discuss.

When we realize that thousands of dollars are being expended by this association in the laboratory and that the results are being given to the world in readable and understandable language, without a charge of any kind, then we begin to comprehend their contribution to the industry.

Supplementing the laboratory work, they now have under construction a test house in Urbana, Illinois. This will be finished September 1, this year.

As a visible evidence of their intent to coöperate with this organization, they have specified that a copper roof be used on this residence.

As far as is known this is the first attempt of its kind by any organization to verify, in a practical way, the findings of laboratory tests and is an undertaking that is being watched by other scientific bodies.

The findings of the laboratory, dating from 1918 to April this year, can be found in Bulletins 112, 119,

120, 140 as published by the University of Illinois.

The work of this organization is to be further extended in an educational publicity campaign, of which will be found in E. F. Glore's paper.

An official invitation has been extended to this national organization and to all state associations of sheet metal contractors, to appoint respectively a special representative to attend their meetings and to take part in their proceedings. To date, four states have responded—Iowa, Wisconsin, Missouri, Pennsylvania.

The third edition of the standard code is now ready for distribution. It has been revised to June 1, 1924. The few changes are:

Factors 40 and 8 are now 60 and 9.

Wall pipe area to be 70 per cent of leader area instead of 60 per cent.

Two hundred copies are here for free distribution.

3. What are other organizations doing for the industry?

A committee of the tile manufacturers and architects have just complated specifications for flues and flue linings, standardizing on sizes and heighths.

It is hoped that a joint committee of all the above organizations may be formed that will have as its object the harmonizing of all interests in the various details that cover a complete installation, to the end that the public be served carefully, honestly and efficiently.

Action on this is already under way and the coming year should show results.

The last question, No. 4, is—What have we, as installers, done and what are we going to do?

We have agreed to use the code. We have, in several instances, put the code into workable form by means of local building ordinances. These efforts are working out fine, but they are too limited and show a lethargy among our membership to go ahead.

Let's, just for a minute, look at our shortcomings and see if it is worth while to continue them, or to about-face and take on new life.

There are six points to consider and we will review them briefly.

The first is: What of our present ethics? Have we any? Or, do we just drift from one job to another? Do we, as a whole, play fair with the consumer and give him the best that is in us? Do we fear our competitor to such an extent that we sink our pride in our work and make an effort to undermine his business by price cutting and substitution. The reaction of the public to this sort of thing is slow but inevitable, and the man who stoops to such practices soon fails and disappears. Does it pay? Reason says no. Then let reason prevail in your dealings. Right is right and wrong is wrong. There is no middle ground.

The second is: Do we advertise?

Yes and no. Some of us do to a limited extent. We use the local newspaper and often wonder why the returns are not larger. Did you ever stop to consider that a good installation is your best ad, and that all the money you spend in your paper is wasted, unless you give the kind of service the public wants. Try it the other way around. Put in some good work. Do it promptly, neatly and correctly, and then try your paper. You'll see a difference. Does your shop window advertise neatness and good goods? If it's dirty, it does not. Think it over.

The third is: How do we sell?

How many of us sit around waiting for a customer to come in. Or, if he calls up, do we tell him we'll be over next week? The live ones get there in a couple of hours, or at least the next day. And, when we're talking to a customer, do we know what we're talking about? Can we explain the good points of the heater we handle? Can we say it in such a way that the customer becomes interested and makes up his mind to buy? A careful study of the literature that comes to your desk will give you an advantage over your competitor that price cutting and cheap goods never will equal.

The fourth is: How do we install?

Do we do it the same way grandpa did? If so, then we should very well drive oxen instead of automobiles. Use smoke signals instead of the telephone and read Hicks' Almanac instead of looking at current events on the screen.

Rip Van Winkle was supposed to have died a long, long while ago, but to see some present day installations is to believe that the Puritans made a mistake when they landed. It might have been better for Plymouth Rock to have done the landing.

Here we have a code that is a going thing, is approved by everyone interested, which even saves an occasional "think." Why not use it and cash in on the good it will do?

The fifth is: Do we collect our bills?

There seems to be little system to this end of our business. When the work is done it should be paid for. Uncollected bills do not pay rent, or buy bread, and even an occasional ticket to the ball game. It's up to you to get busy.

The sixth and last is: Do you consider goodwill worth anything?

All men have a secret pride that forces them to make a good showing before others. They really make an effort to appear better than they really are. Have you ever thought that a strenuous endeavor along this line to show up in your workmanship might bring better results?

We all want the good will of our friends and customers. How is the best way to do it? The answer is, to be courteous, to be prompt, to be accurate, to be loyal and most of all to be honest with ourselves and others.

Having analyzed ourselves and eliminated our shortcomings, let us profit by the mistakes of the past, put our shoulders to the wheel and strive with all our might to make the business we are in a joy and a pleasure, with the realization that we, in our small way, are contributing to the health and happiness of every man, woman and child who needs and uses a warm air heating system.

Dr. Wagner Tells Sheet Metal Men at Washington That the "Golden Rule" Must Be Kept Inviolate.

Each Man Must Be Willing to Do His Part First Before He Can Expect The Other Fellow to Help Him.

"THE Ethics of Our Business" was the subject of the address given by Dr. John P. Wagner, Dowagiac, Michigan, before the National Sheet Metal Contractors' Convention, Washington, D. C., June 17 to 20:

When men gather together in convention to promote their industry, it is to be assumed that their desire is to improve themselves along lines that will lift them and their industry into the realm of progressive and constructive betterment.

The sheet metal industry has become a large factor among the arts and crafts, so much so that it takes a part in the construction of every class of building throughout the world.

In every village, town and city the sheet metal worker is to be formed to and by what he has to do in the well being of his fellow man.

The sheet metal contractor, through the advancement of his industry, is called upon to display his wares and products. It is our purpose to talk about the business side of our problems, assuming, of course, that we are all conversant with the art of our craft.

What has the sheet metal contractor and sheet metal merchant done to promote better business practice? Has he studied the ethical side of business, that very important factor so necessary for the enjoyment of successful business? For without clean ethics in your business you cannot hope to rise very high in the minds of your fellow men. The Golden Rule must be practiced in all we do, we must be willing to do our part first before we can expect the other fellow to do anything for us.

Truth, honesty and integrity must enter into our business if we wish to succeed. The business that is conducted upon truth, honesty and integrity will stand the limelight and the acid test, and it will win the respect of every man.

Have we given the matter of standard of quality the consideration it merits to build a good business reputation? It is one of the first foundation stones of a good business to fix your standard of quality—remembering that quality standards bring to you the kind of customers you desire—for like begets like.

Dr. John P. Wagner.

If you sell high-class merchandise and do high-class work, you will attract the customer who is desirous to receive from you the best you have in yourself and your merchandise and the customer will always be glad and willing to pay you a fair price.

When you do poor, shoddy work and sell cheap, shoddy merchandise, you will find that your customers are like you and your merchandise, and you will also find that you always have plenty of trouble to pay your bills and plenty of trouble to collect your money, as well as to satisfy your customers.

The people want better work and better merchandise from you and you must realize this fact and take an active part in the education of the public to the benefits derived from buying the standard high-class merchandise. It's up to you, Mr. Sheet Metal Contractor, to sell your own standard—for by your works you will be judged and it is by your conduct as a merchant as well as a contractor that you will be respected in your community.

The simple basis of every business must be: Tell the truth about everything. That is the greatest safeguard there is to every man's business success.

The lie and the liar soon come to a bad ending.

Be honest in your dealings with your customer, it always brings back to you what you give with a tenfold return. You are entitled to a fair profit for your work and merchandise and your customer will be glad to pay it when you have given him value received.

Even the thief will respect honesty above all else.

Your reputation depends upon your integrity and all men are measured by that standard, to be respected, to be trusted, to be known as dependable is a golden treasure greater than a big bank account disreputably obtained.

Remember that a good business man values the customer he has gained and he cultivates him by his desire to do the right thing always, and holds him because the customer always wants to deal with the man he can trust and depend upon.

We have still another important factor to consider in good business practice and that is to know your business. We must know how and what to buy. This becomes an easy task when we know our business. A good rule is to never buy more than you need and buy it at a fair price,

remembering that the other fellow must have a fair profit and you will attract the high-class manufacturer to your place of business when you reflect a reputation of fairness when buying your merchandise.

Sell your work, service and merchandise at a fair price and don't forget that you have an overhead cost, and that you must get a profit which is necessary to maintain your business integrity.

Don't try to meet the other fellow's price, it's an admission to the public that you do not know your business and that you are dependent upon your competitor to do your figuring for you—and when you know your business you will know how to figure your costs and how to charge your customer a fair price.

It is often the case that the fellow who is a cutthroat price cutter soon ends up by cutting his own throat. There is no more despicable fellow than the wrecker of legitimate business enterprise.

Every steel metal contractor must be a progressive educator in his community — standing for better business practice and he must faithfully plug away to raise the standard of business integrity. The public wants education about your business and it's up to you to give the public what it wants.

The first step is to lay your own foundation to put your own house in order then the public will believe what you will print in your local paper about your business. If we will only let the public be our judges as to our integrity we will soon find that it will pay to improve ourselves.

Now, then, what are we to do about it? What to do and where to start?

The answer is *naw* and *here*. This is the place—this association can do a vast and grand work toward solving our problems.

What we need is to get busy and start something and do it now.

Universal effort can only come from individual desire and individual effort. If we resolve to get together, lay aside petty things and take our coats off then we can and will accomplish big things.

We must get together and pull one way only. For in union there is strength. No organization has ever strove and gained anything constructive when it is divided against itself. Constructive coöperation will bring results. In bonding ourselves bigger and better work. A few can't do it. It takes all of us, and at that, we must make up our minds that the task will be one that will mean hard work.

If each attendant to this convention will go home with a firm resolve to lay aside all petty jealousy selfishness, hate and ill will against his competitor and start in to build up his business on the basis of truth, honesty and integrity, it will be the beginning of a new work that will bring to us a result which we all want—and if we work hard enough it will be accomplished.

Get together, meet your competitor with a desire to know and help him and you will like him and he will like you. Talk it over with him. Talk about the code regulating furnace installations, talk about other standard practices and you will soon find that you will not always be the high bidder on competition jobs—you will find that standard specification will greatly eliminate the big differences when bidding on work.

Talk and teach standards. It pays to do it.

Build up your local organization for better practice, act as a unit, work to provide the best welfare of your community, it will improve everybody in the community and you will get your liberal benefit out of your effort.

There is a place higher up in the business world for the sheet metal contractor. Why not strive for that object now?

F. R. Still Says High Speed Fans Cannot be Made to Run Absolutely Noiseless.

When Combined With Heating Coils, Air Washers or Long Ducts, However, the Noise Is Subdued Below an Objectional Disturbance.

ON PAGE 14 of our May 31st issue there appeared an article headed, "Can Noise Be Avoided and Safety Assured with High Speed Ventilating Fans?" The article referred to statements made by F. R. Still, of the American Blower Company, regarding fan installations. The main article, however, was made up of excerpts from an address made by C. A. Booth, of the Buffalo Forge Company, before the New York section of the American Institute of Electrical Engineers.

In the following letter to AMERICAN ARTISAN, Mr. Still discusses further the problems met with in trying to eliminate the noise of high speed fans.

TO AMERICAN ARTISAN:

In the May 31st edition of AMERICAN ARTISAN, page 14, there appeared a reference to the paper I presented to the New York section of the American Institute of Electrical Engineers, following this there were liberal extracts from a paper presented by C. A. Booth, in which he claims that fans can be run noiselessly at peripheral velocities of 6,500 feet or more per minute.

His paper dealt more with applications for forced draft in power plants that it did with ventilating plants, and most of the slides he presented showed fans for power plants instead of ventilating plants for schools, churches, theaters and auditoriums where absolute quiet is a prime consideration. The only ventilating plant he referred to was in the new Statler Hotel, Buffalo; around a hotel there are so many other disturbing noises that the noise made by an ordinary fan would hardly be noticed.

Our claims about noiseless operation are not based on snap judgment, neither have we arrived at this conclusion without a great deal of painstaking experimentation and careful observation of a lot of in-

stallations including all the different makes of fans. We can point to many installations where great dissatisfaction is freely expressed about the noise the fans make, and there are several places where high speed fans have been removed and slow speed fans substituted. These cases are not confined to any one make, but to several makes of fans.

It stands to reason that high speed fans cannot be absolutely quiet. We have found that the maximum speed of the fan tips is about 6,500 feet; even then none of the fans are absolutely noiseless, but when combined with heating coils, an air washer, long ducts and flues, most of the noise is subdued to a point where it does not create an objectionable disturbance. If one of them could be run at that speed in an adjacent room to the one occupied, if no more than a short duct connected the fan outlet to the opening in the room, the noise would then be objectionable.

Comparison with something we are all familiar with is about the only way we can comprehend some things with which we are not so familiar. Therefore, let us compare the speed of one of these fans at 6,500 feet tip velocity with the wind. This velocity is equal to a wind blowing at seventy-four miles an hour. The United States weather bureau classifies this velocity as a hurricane. We all know that when the wind blows at forty or fifty miles an hour it makes quite a disturbance; anything which intercepts its path makes a whistling noise. When a number of fan blades are revolved in the air at the same velocity, there is no difference in the effect, so far as noise is concerned, than would be the case if the blades were stationary and the wind blew past them at the same velocity.

I am willing to allow the argument to rest entirely on the judgment of anybody as to whether or not he thinks it would be quiet in the auditorium of a church, if a high speed fan was immediately beneath it and was running at any such tip velocity as 6,500 feet per minute. Would it be quiet enough if the wind was blowing seventy miles per hour through a tunnel beneath the floor?

High speed fans do not set up high air velocities; they are designed primarily to produce low air velocities when running at revolutions suitable for attachment to the standard motor speeds. For example: Supposing a volume of 20,000 cubic feet per minute is wanted at one-inch static pressure. A high speed fan running 495 revolutions per minute will deliver that volume against one-inch frictional air resistance with an outlet velocity of only 1,600 feet per minute. This is about the full load speed of an alternating current 60-cycle motor. The tip speed of the impeller, however, will be 6,218 feet per minute, or a little over seventy miles per hour.

With a slow speed fan of the type recommended for such a place, the speed would be only 225 revolutions per minute for the same volume and pressure; the outlet velocity would be the same and the tip speed would only be 2,830 feet per minute, or about 32 miles per hour, which is less than half the tip velocity of the other fan.

There is nothing new or mysterious about this matter. High speed fans are not new. The writer brought out the first one in 1896, since which time hundreds have been built and are still running. A lot of camouflage has been thrown about the subject, but there is absolutely nothing new to it. Some rather extravagant claims have been broadly made at times by some fan makers, which, taken at face value without qualification, would be rather difficult for them to prove.

One type of fan is better adapted to some particular place or duty than another; if this were not so, then there would not be so many different types. The high speed type is not well adapted to buildings wherein noiseless operation is a prime essential, if the operating conditions are such that the tip speed has to exceed 6,500 feet. That means that the maximum outlet velocity will be about 1,800 feet at ⅞" pressure; 1,700 feet at 1" pressure; 1,500 feet at 1¼" pressure; 1,300 feet at 1½" pressure; 1,100 feet at 1¾" pressure, and 750 feet outlet velocity at 2" pressure. We would not even want to recommend a tip velocity of 6,500 feet if there were not heating coils or other objects to deaden the noise made by the fan blades before the air entered the building. No fan on the market today can be safely accepted for such places when running at such velocities, and we maintain this statement applies to any make or type. High speeds or high velocities are absolutely incompatible wth noiseless operation; hence, they should be avoided in schools, churches, theaters and auditoriums.

F. R. STILL.

Gerhardt Company, "Frisco" Opens Show Room at 4405 Geary Street.

The George T. Gerhardt Company announces that it has opened a show room and office at 4405 Geary Street, San Francisco, California.

The company is the exclusive distributor for the following factories: Duplex Gas Products Company, the United States Register Company, Thatcher Furnace Company, Simplex Heater Company.

The company also announces that it carries a complete stock of furnace fittings, steel registers, gas furnaces, grills and water heaters.

They do a wholesale business only, and are very comfortably situated in their present location.

Ford Buys 100 Brillion Iron Works' Furnaces.

A contract for the installation of one hundred Brillion warm air furnaces in homes built by the Ford Motor Company, Iron Mountain, Michigan, has been obtained by the Brillion Iron Works, at Brillion, Wisconsin.

If you have built castles in the air, your work need not be lost; that is where they should be. Now put the foundations under them.

Bottom Dimensions Must be Considered First in Making Pattern for Bath Tub.

In Arriving at Sizes of Galvanized Iron Tub, Designer Must Leave That to Each Individual Person.

Written Especially for AMERICAN ARTISAN by O. W. Kothe. Principal, St. Louis Technical Institute, St. Louis, Missouri.

RESPONDING to the inquiry of a Minnesota subscriber for patterns for a bath tub, the accompanying illustration will give the correct treatment. About sizes, the writer must leave that to each individual person, but will make certain suggestions that may prove helpful in establishing something suitable.

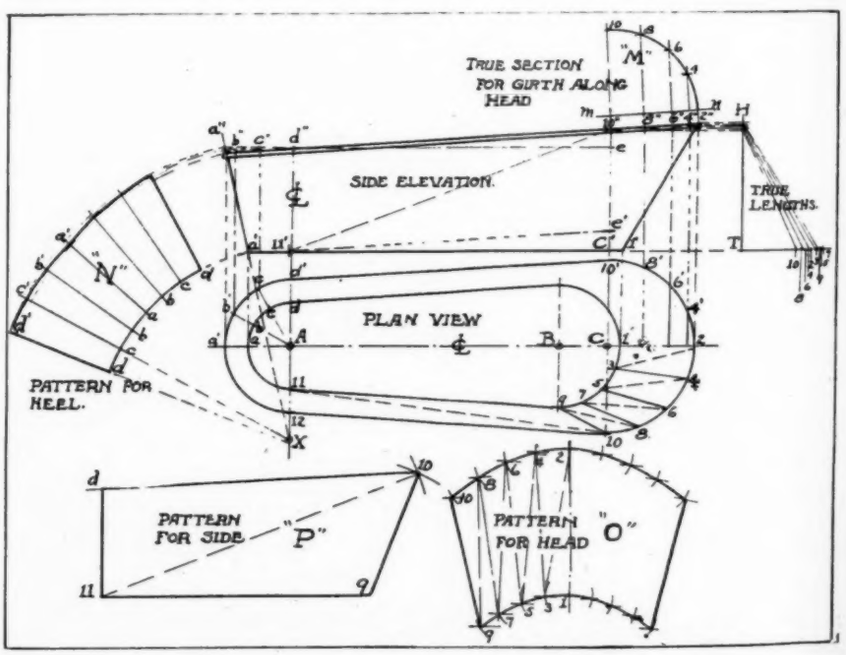
No doubt the bottom is the first thing to consider; the length, as 1-a of plan can be made to any length; possibly 4 to 5 feet. In this case it proportioned to five feet, and it is, no doubt, somewhat long. Possibly a 4-foot tub is more serviceable, because it will be stiffer and the main object is to sit in it and straighten the limbs out—further than that length has little value, because when persons lay down they generally kink the knees up anyhow, so I should govern the customer by his length when he sits down and leaving possibly six inches to spare.

Now the width of the foot end could be made about 12 to 16 inches as 11-d. It is 14 inches in this case. The head must be made of a width to suit the biggest person in the family. In this case we made it about 20 inches, which may do for rather skinny folks; but for heavy folks this end may have to be 24 inches. When these measurements are decided on—the two semi-circles are described, and the side lines are connected tangent with the semi-circles. About this time a person should sit down on the drawing and see how the proportions are, and if short, wide or narrow—these adjustments should be made. When made, we can then go further, by erecting the elevation; drawing a′-1′ parallel with center line of plan or horizontal, and then draw the angle of slope for the foot end as a′-a″. This is the flare of the end and sides, and measured about 4 inches in this case; although it can be made more or less as fancy strikes you. But it is well not to make it too flaring or too straight since too flaring makes it bulky and cumbersome, and too straight makes it flimsy.

When this angle is decided upon, then drop a line from a″ to a′ in plan and describe the outer half circle. Next draw the outside side lines tangent with the semi-circles, so they are parallel with the bottom side line 11-9. This makes the sides stiff and of good proportion; but see that line 12-10 is parallel to 9-11. After this draw the flare line for the head of tub; about 60 degrees is a good angle, and in this case makes about a 12-inch flare.

When this is done the height must be decided upon, and the top line slopes from the top head to the foot end. In this case we have about a 5-inch slope, but it could stand more, possibly 7 or 8, since there is no need to have it so high at the foot end, and it is only at the head end where the washing is done. The height from C′-10″ is made about 20 inches in this case and possibly could be a couple of inches shorter and not hurt anything. This, then establishes our outline for elevation, and if it is satisfactory we go ahead, but if not, the lines are adjusted to what you think they should be.

Now from point 2″ drop a line into plan as point 2, and next pick dividers and locate the center C by a series of trials. Observe, the radius must be set so that the arc or semi-circle will pass through point 2 and also be tangent the side lines d′-10′ and 12-10. When you have achieved this, then from the center C describe the top line of head. Divide this plan in equal spaces, as from 2 to 10, and also 2 to 10′; also divide the quarter circle 1-9 in the same equal spaces. Number each point and draw lines so you can travel from one point to another in a progressive manner as from 1 to 2, 2 to 3, 3 to 4, 4 to 5, etc., to 9



Development of Patterns for Bath Tub.

to 10; which divided this head into triangles. Also divide the foot quarter circle in equal parts as a-b-c-d and from A radiate the lines to also cross the outside arc as in points a'-b'-c'-d'. From these latter points erect vertical lines to cross the top elevation lines as at b"-c"-d". Also erect lines from the head points as 4'-6'-8'-10' into elevation as 4"-6"-8"-10". These points give us the altitudinal points of elevation.

Now the foot of tub we can lay out by the sweep method, which is identical like laying out a funnel; only this is half a funnel, and the top is slanting. The head has an unequal flare with the rest of the tub, and must be laid out by triangulation, and the side pattern is laid out by triangulation as a matter of convenience. To obtain the true length from our plan, we let the plan lines represent base lines and elevation, vertical lines to be altitudes. So that from head points as 4-foot, 6-foot, 8-foot, 10-foot into points 2"-4"-6"-8"-10" bring over horizontal points or lines to cross the vertical line H-T of true length diagram. Then with dividers pick all lines from plan as 1-2, 2-3, 3-4, 4-5, 5-6, etc., to 9-10 and set them as T-3-4-5, etc. Then lines drawn to the corresponding altitude give us the true length for the heel of patterns.

Now in looking at the side of plan the line 11-10 is a diagonal line and passes from the bottom to the top. So we pick this line and set it as C'-11' on the base line of elevation. Then let C'-10" be the altitude and draw slant line as 11'-10" which is the true length. Again notice the line 10-12 of plan is on a slope; while the elevation line d"-10" is also on a slant—so that neither of these lines are true lengths for the top edge. From d" of elevation being over a horizontal line as d"-e; then 10"-e is the rise in the line d"-10". Pick this rise e-LO" and set as C'-e', and with tramel points pick the plan line 10-12 and set as C'-11 in this case. Draw line to e' and you have the true length for top line.

Since the top is sloping, we must also develop a true section "M" so we have the true girth for the head line of pattern. To do this draw any line as m-n, parallel to 2'-a", and from 2"-4"-6"-8"-10" square lines at right angles to 10"-2" as 4"-4; 6"-6, etc. Now pick the length of half diameter lines as from 4'-6'-8'-10' to center lines C-2, and set these in diagram "M" and then trace a curved line through points thus established. This then prepares the ground work for laying out the patterns.

The foot end is described by extending the flare line a"-a' to x and from this center describe the pattern "N." Observe the girth is stepped off on the bottom of pattern, and must therefore be equal to the bottom line of plan as a-b-c-d. To set out the pattern for head: draw any line as 1-2, equal to 1-2 of elevation, or H-2 in diagram: Now set one pair of compasses to girth space 2"-4 of "M" and using 2 in pattern as center, strike arc as at 4. Next pick girth space 1-3 from plan and set it as 1-3 in pattern. Pick true length H-3, and using 2 as center, cross arcs in point 3. Next pick line H-4 and using the new point as center, cross arc in point 4. Repeat the process until point 10 is established, and you have the pattern for head.

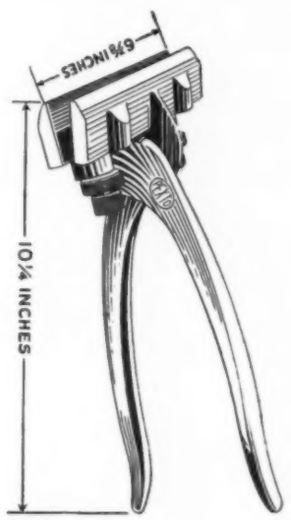
To set out the pattern for side, observe that line 9-11 of plan is a true length for the base of pattern as 9-11. From 11 square up a vertical line and make it equal in length to d'-d of pattern "N" as 11-d. Next pick the seam line 9-10 from pattern "O" and set to 9 as center describe an arc indefinitely. Then pick true length 11'-10" from elevation, and using 11 in pattern as center cross arcs in point 10. Next pick true length 11'-e' from elevation and see if it corresponds to d-10 in pattern; if so, it is correct; if not, then retrace your work, as some oversight has been made. Laps for seaming and wiring must be allowed extra. Possibly a ⅜-inch roll or even a ½ or a ¾ roll would be suitable at the top. For the roll edge allow 2½ times the diameter of the rod or pipe whatever you wish to inclose.

This is not an easy problem, and unless the correspondent has done considerable drafting, he is slated for some troublesome work; but possibly you can worry through it somehow, as this is about the best the writer can do.

Handy Seamer Added to Pexto Line of Small Hand Tools.

The successful introduction and sales of a handy seamer size over-all 7¼x3½ inches has encouraged the Peck Stow & Wilcox Company, Southington, Connecticut, to add to its line of hand tools for the sheet metal contractor a larger size handy seamer as illustrated herewith.

This jumbo handy seamer measures ten and one-fourth inches over all. The width of blade is six and



Pexto Handy Seamer.

seven-eighths inches and the tool weighs three pounds. It is provided with knurled screw gauge fitted with knurled lock nuts and is adjustable for seams of different widths up to 1 inch wide.

On the roof and in the shop a seamer of this description is always handy. The mechanic who finds the smaller handy seamer a great aid to his progress, but a little too small and light for some jobs, will welcome this introduction of the Jumbo Handy Seamer, says the manufacturer.

National Sheet Metal Contractors Pour Into Washington, D. C., for Twentieth Annual Meet.

Metal Cornices, Business Ethics, Apprentice Training and Mount Vernon Pilgrimage Features of Convention June 17 to 20.

THE opening of the twentieth annual convention of the National Association of Sheet Metal Contractors was called to order promtply at 10 a. m. Tuesday, June 17th, in the beautiful ball room of the Raleigh Hotel, Washington, D.. C., by Paul F. Brandstedt, chairman of the convention committee and former president of the association.

After the singing of the national anthem, Reverend Dr. W. T. Cook delivered the invocation in a very impressive manner.

Mr. Brandstedt then introduced James Oyster, of the board of commissioners, who extended a wholehearted welcome to the sheet metal contractors and in doing so urged the coöperation of his audience in securing full citizenship for the inhabitants of the District of Columbia, who have no vote as to the spending of the great amount of taxes paid by them.

George Thesmacher, Cleveland, responded in his typically eloquent manner to Mr. Oyster's address of welcome.

Stephen S. Tuthill, secretary of the American Zinc Institute, was introduced and told of the promotion campaign which is to be carried on by the sheet and tin plate manufacturers, and urged that a real point of contact between the national association by appointing a special delegate to sit in with the American Zinc Institute in its work on proper coating and gauges.

He said the zinc people are planning a campaign on standard zinc coating for roofing and other materials.

Chairman Brandtstedt turned over the convention to President John A. Pierpoint, who appointed the following committees:

Resolutions—E. B. Langenberg, St. Louis; J. E. Merrick, Louisville, Kentucky; George I. Ray, Charlotte, North Carolina; Frank Treuchet, Springfield, Massachusetts; George F. Mooney, Columbia, Ohio.

Credentials—Max Walton and Joseph Apolonis, both of Washington, D. C.

Reports were made by the state secretaries of Pennsylvania, Wisconsin, Kentucky, Iowa and the Tri-State Association (North and South Carolina and Virginia).

Courtesy of Baltimore & Ohio Railroad.

The Capitol Dome.

William Angermeyer, Pennsylvania, cited the fact that Pittsburgh has the largest local—seventy-eight members.

Paul L. Biersach submitted the following report on behalf of Secretary Kelm of Wisconsin:

Report of the Wisconsin Association.

The Wisconsin State Association today is in splendid shape, both physically and financially, and is successfully stepping forward.

The past year resignations have been almost negligible, and the board of directors are at the present time working out plans for a membership increase throughout the state, among them the plan of inviting all sheet metal contractors, who are at present not affiliated with the local or state, to a grand picnic to be given by the Milwaukee local some time in August.

Wisconsin is also plunging into the work of bringing back cornice and general sheet metal work through an educational program to architects throughout the state. The endorsement of this propaganda by the association is bound to increase sheet metal work in many ways, for an architect would be more apt to listen to counsel from an association than from an individual, and eventually he will consider using more metal, and will specify greater quantities of it, for after all, nothing can take the place of metal.

The attendance at the monthly meetings has been good, and it was voted by the board of directors to have the secretary send a monthly message to every member of the association, regarding the meetings and other matters of interest. This ought to have a good influence, for every member throughout the state will be in touch with his association constantly and will, therefore, not feel as if the association were dead, like he might if he never heard from them, and at the same time it is a splendid opportunity to urge every member to get a new member for the year of 1924.

Everyone seems to be pleased with the way things are moving in this state and we hope that everything we undertake will show good results and progress, especially in securing new members.

R. E. KELM.
Secretary.

Secretary Seabrook read the two letters sent by the state association to architects on the use of sheet metal cornices. One of these letters has already been published in a recent issue of AMERICAN ARTISAN.

A. N. Lichty, on behalf of the Iowa association, spoke on the plan by which this young organization has made the employment of a full time secretary possible.

J. E. Merrick, of the Kentucky association, told of the work of the Louisville local, which is less than two years old, such as the uniform contract by which no separation of work is allowed; no work erected unless contractor supplies the material; payment on contracts at stated intervals during the work and final payment within a stated time limit.

Adjournment of the morning session was then taken.

Paul Brandstedt's resolution to change the name of the association *Journal* to *"The National Sheet Metal Contractor"* was referred to the resolutions committee.

Tuesday Afternoon Session.

The afternoon session opened at 1:30 p. m., at which time the following committees were appointed by President Pierpoint:

Auditing of Journal—William Parry, Youngstown, Ohio; William Strehow, Cincinnati; Charles A. Swain, Cape May, New Jersey.

John A. Pierpoint, Retiring President.

General Audit—Samuel Warren, Erie, Pennsylvania; Louis Heck, Louisville, Kentucky; C. A. Cawthon, Murphreysboro, Tennessee.

President Pierpoint then read his annual report, as follows:

Report of President John A. Pierpoint.

Today, we gather again to emphasize anew the significance of our charter members; some twenty years ago, when a few men met and decided to organize and maintain a National Association of Sheet Metal Contractors.

How well we have succeeded is not only shown by the large number of delegates and friends in attendance, but by the steady growth in membership and work being done by your association committees.

I desire to say that we must grow in this work. Though it may appear slow, our path leads straight on to success. And the trade, rightfully demands that we do our whole duty. We shall not falter. Nor should we be contented until we have reached a membership of 100 per cent, and the highest ideals in business ethics.

As delegates to this convention, we should recognize the high honor conferred upon us by our constituents in their selection of us to represent them and their interests here. We should strive to take an active part in the deliberations and important work this convention will be called on to consider.

It is here that we should join hands with our fellow delegates and give to the convention the best we have. These sentiments should inspire us to work for those we represent and the future uplift of this association.

The plans for this year arranged at the St. Louis convention comprise confining the work to strengthening the weak spots in our association, rather than to attempt new organization work on an extended scale. This method has been followed up by dividing the work up between your president and national secretary.

One National Officer Attended Every State Convention.

We have been able to have at least one national officer attend every state convention held this past year; with one exception. And reports show that all were well attended and that good programs were presented and a large amount of organization work was planned for the future.

We have added one state association — that of Kentucky — and eight local associations—Augusta, Georgia; Little Rock, Arkansas; Miama and Tampa, Florida; Norfolk, Virginia; Rochester and Newburg, New York, and Aurora, Illinois—during the year, with the prospects of getting Sacramento, California, and Elmira, New York. Dallas, Texas, has affiliated only recently, while the prospects of Oregon and British Columbia coming in the near future are good.

Paul F. Braudstedt, Chairman, Convention Committee and Trade Development Committee.

The enrollment of new members is about 360, with a substantial increase in assets of the association.

In the interest of association work, I attended the Ohio state convention, held in Cincinnati. This meeting was well attended, and plans were adopted to enroll every sheet metal man in the state, together with the accomplishment of a large amount of local association work, which I am sure will be beneficial to the Ohio organization.

At the request of the officers of the Virginia, North and South Carolina state association, I represented the national's interests at a meeting called at Norfolk, Virginia, at which time we were able to secure the affiliation of the Norfolk association, which completed the organization of the Tri-State of Virginia, North and South Carolinas.

On February 12th and 13th, I attended the regular Virginia, North and South Carolina Tri-State con-

vention, held at Raleigh, North Carolina. This meeting was not only well attended, but some good work was accomplished and a large amount of organization work was planned for the year.

On February 14th and 15th, I was present at the Georgia State convention, which was held at Atlanta, Georgia; and wish to report that the state of Georgia has a splendid organization. The meeting was well attended and was both interesting and instructive. Several new members were added to their credit and they are making wonderful strides in the line of association work; with a membership at that date of forty-six, with every prospect of a further increase in the near future.

On February 18th and 19th I attended the Florida state association convention, which was held at Tampa, Florida. This meeting, like the Georgia meeting was well attended and a well directed program was carried out. Florida at that time having forty-seven members, one more than Georgia, one from St. Petersburg having joined during the meeting, making a total of forty-eight members.

On February 27th and 28th I attended the first annual state convention of Kentucky, which was held at Louisville. This state association, which was less than one year old at the time, had made wonderful strides in organization work, and hopes to have a 100 per cent state organization by the next convention.

This association has the distinction of having its own supply warehouse, and though only one year old, has been able to declare a substantial dividend on the year's business.

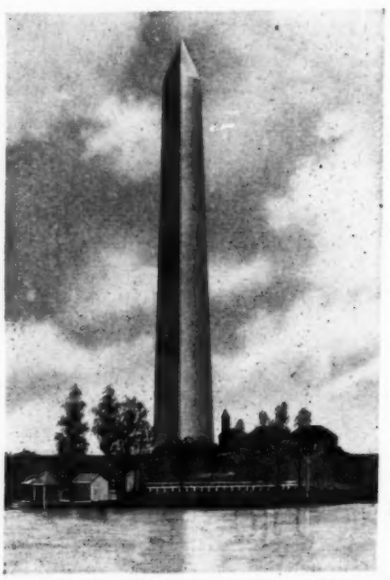
At the request of the New Jersey state association, I was present at their annual convention, which was held in Trenton, on April 2nd and 3rd; and together with the national secretary, assisted in the interest of the association work.

Business Not Going to Be Rushed.

As to future business conditions, I can only surmise, from what is said by those who pretend to know, which is, that the outlook for the coming year, is not as favorable as in the past, or, in other words, we are not going to be rushed.

In fact, there is a slight slackening in business activities, largely due to labor cost. The fact being that none of us, including particularly the mechanics, have had to work hard of late for a living, and the sooner we are able to reduce our labor cost, by producing more or paying less, the sooner we will be able to reduce our selling price and invite the buying public to buy at a price they are willing to pay.

There is a slackening in the demand for labor throughout most sections of the country, which means



Courtesy of Baltimore & Ohio Railroad

Washington's Monument.

the beginning of deflation of labor cost.

The unfortunate fact exists, that labor does not recognize these things without experiencing hardships. Nevertheless, it is absolutely necessary that the cost of labor be reduced if business is to continue good in the future.

In conclusion, I desire to say, that my work for the association this past year has been a pleasure to me, owing to the able assistance given me by the officers and members at all times.

And I, therefore, take this opportunity to express my thanks for their willing coöperation in the furtherance of the association work. And, to express my appreciation to the supply houses and their salesmen, who have given their time to assisting in association work.

Treasurer Gerock rendered his report, which showed a healthy financial condition of the association.

Secretary Seabrook's report, which goes into the details of the national association's activities, follows:

Report of Secretary Seabrook.

This is the twentieth annual convention of the only body composed exclusively of sheet metal contractors, and nationally organized to give expression to the collective opinion and will of the sheet metal industry from the viewpoint of the sheet metal contractor. In this respect this gathering is truly the sheet metal industry of the nation in convention.

However strong or weak its voice, whatever its defects in vision, imperfection in methods, or shortcomings in execution of its policies, it is the only organization qualified by its structures, purpose and program to speak and act for the sheet metal contractors of the nation when their common interests are involved.

Every sheet metal contractor of this industrial section of the sum total of the nation's business is contributing to the strength or weakness of this common medium of action. In other words, the National Association of Sheet Metal Contractors, with all its virtues and faults, strength and weakness, is the best organization of its kind that the sheet metal contractors of the nation have yet demonstrated their ability to build. Those who have contributed most to the building are naturally proudest of their product.

This national gathering has not convened to unduly exult in achievement, nor to indulge in the mournful pastime of apologies for failures. Progress, however, demands that we know where we are, what the task, and how adequately equipped we are to perform it. Here then are the results of the year's work.

The year just closed has been a prosperous one for the association from every standpoint. The membership shows a healthy growth, financial resources are greater, the

state associations, with one or two exceptions, stronger, and are gradually assuming permanency. This means more locals, more members, more team work, more association activity.

National Officer Attends All Conventions.

The work for the year, outlined at the St. Louis convention, was to assist and strengthen the present organizations, particularly those showing signs of weakness, rather than attempt a large amount of new organization work. This plan has been carried out with success. Soon after the St. Louis convention, President Pierpoint and myself met in Baltimore and planned for nearly half a day the work of the coming year. One of the features decided upon was that so far as possible a national officer should attend each state convention, and certain states be grouped and requested to hold their conventions consecutively, so as to save time and expense of the national officer attending. This plan was successful in two groups. With one exception a national officer has been in attendance at all state conventions.

Edwin L. Seabrook, Secretary.

My own travels during the year have been East as far as Boston, Massachusetts, and West to Oklahoma City, Oklahoma. Locals were visited, conferences held with state officers, and state conventions attended. Of the latter there were seven. Organization work, however, has not been neglected. One state association (Kentucky) was organized in December, and has made a most creditable showing in membership. Eight locals have been organized and affiliated; Miami and Tampa, Florida; Augusta, Georgia; Aurora, Illinois; Rochester and Newburgh, New York; Norfolk, Virginia, and Little Rock, Arkansas. One—Elmira, New York—has been organized and affiliated since the fiscal year closed June 1st. Los Angeles, California, is organizing, and promises affiliation when the same is completed. Sacramento, California, is organized, and inquires about affiliating. The northwest association, comprising the states of Washington, Oregon and a part of British Columbia, has just been organized. Many of its members belong to the national through the Portland and Tacoma locals. This new association has been asked to affiliate with the national.

The number of new members from all sources reported from June 1, 1923, to June 1, 1924, was 353. From this number must probably be deducted 200 for resignations, non-payment of per capita tax and other causes. This shows a net gain of approximately 150. This number, however, does not represent the true increase. Reports are coming in from state and local secretaries which show gains not included in the above. More than 80 per cent of membership losses come from a single source—"dropped for non-payment of dues." Resignations are few, deaths and retirement from business add some, but by far the greater number have "delinquent" or "dropped for non-payment of dues" after the name on the membership report.

Salesmen's Auxiliaries.

Worthy mention is due the various salesmen's auxiliaries. In several instances they have assisted in organizing locals, and in various ways made the state conventions a success. The salesmen can be a powerful factor in creating a favorable impression for the association.

Finances.

The finances of the association are in very good condition, despite the fact that more was spent for traveling and organization work than in any previous year. The attached financial statement gives in detail the receipts and expenditures, and a comparison with the previous year.

Julius Gerock, Jr., Treasurer.

The total assets of the association are $14,630.98, a gain for the year of $1,227.69. Here again these figures do not give the exact condition, as a large amount of per capita tax has been received since June 1st and not included in the above. The assets consist of cash, investments and accrued interest on same, due from advertising accounts, supplies on hand and office equipment. No unpaid per capita tax is included, nor any value placed on the *Journal*, which is the property of the association. During the year $1,949.40 was invested in a $2,000 5 per cent Woodruff County, Arkansas, road bond.

State Associations.

One of the most encouraging features of the year's work has been the activities of the various state associations. What seemed a problem in this respect a year ago is being solved by the state associations themselves. With two exceptions each state association has held a convention during the year. Considering all the circumstances, these have been well attended, the pro-

grams have been practical, and of a high character. Consideration is being given by several state associations to the employment of a full time secretary. Two—Iowa and Ohio—have tried this plan for a year, with success. Iowa provided the financial resources before employing a secretary. It may well be doubted whether state associations where a large membership is available can attain the greatest success without employing a full time secretary. Some such plan as that adopted by the Iowa state association may well receive the favorable consideration of other state associations having in view the employment of a full time secretray.

Two state associations have appropriated funds to bring to the attention of architects and others the merits of sheet metal, particularly that of cornices. It might not be out of place to suggest that if these were put into a common fund, and the work done from some central point, it would lessen the expense and reach a wider field, thus making it more effective.

The Journal.

A report of this nature to the convention would hardly be complete without some mention of the *Journal*. This is the official publication; it is owned by the association, and occupies a most important position in all our activities. It would be impossible under present conditions, to carry on the work extensively, as is being done, without the assistance of the *Journal*. It has a mission peculiarly its own, and its field could not be covered in any other way. The *Journal* is not a rival, nor competing with the other publications covering our particular industry. The amount of advertising it has carried during the year has been very satisfactory.

Twentieth Anniversary.

On the 22nd day of next February, the national association will be twenty years old. I should like to suggest that the convention recommend to the local associations that this event be appropriately celebrated by the different locals on or about that date. These celebrations might well be in the form of a dinner.

Publicity.

Attention was given in many of the state conventions, to the need of greater publicity for the sheet metal industry, not only on the part of the sheet metal contractor himself, but from the sources of sheet metal supplies. It might not be amiss for this convention to place itself on record as favoring some general publicity plan for the sheet metal industry, such as national advertising.

We take this opportunity to publicly thank the management of the Baltimore and Ohio Railroad for the expeditious manner in which it provided for the comfort and welfare of the delegates while en route to and from the National Sheet Metal Convention in Washington, D. C., June 17 to 20.

AMERICAN ARTISAN *wishes particularly to thank John H. Cook, District Passenger Representative, for his untiring efforts in providing for the welfare of the delegates passing through Chicago, and for the courteous loan of the photographs of Washington points of interest, which has made it possible for us to enhance the interest of our convention report.*

State Delegates.

At the recent meeting of the National Warm Air Heating and Ventilating Association, it was decided to ask each state association to be represented at its future meetings by an accredited delegate. Some delegates have already been appointed from the state associations, and this convention could, with propriety, recommend to the state associations that as far as possible they send one or more delegates to the annual meetings of the National Warm Air Heating and Ventilating Association.

General Condition.

It will be evident from the foregoing that the general condition of our national association, taken as a whole, is excellent. The membership in local and state associations is more solid than ever before, and is making good progress.

W. C. Markle, Pittsburgh, delivered the following report on the work which is being done in Pittsburgh in regard to the training of apprentices:

Vocational Training for Sheet Metal Apprentices, by W. C. Markley.

The shortage of building trades craftsmen has become alarming, due to the antiquated and inefficient methods of training apprentices, which have been followed until quite recently and we have not been able to train the necessary number of skilled workmen to replace the number of men that are lost to the trades every year, through death and deflection to other occupations, nor, to supply the increased number of men needed to meet the requirements of building construction due to increased population and industrial expansion.

Because of this fact there are a number of organizations aroused to the fact that some definite program of training apprentices must be provided in order to strike a balance and restore the present chaotic labor conditions in the building crafts to a normal state.

The Federal Board for Vocational Education recognized this fact when it called a conference at Washington to lay out a program for a nationwide campaign for a better system of training apprentices for the building trades.

This meeting was attended by representatives of the American Institute of Architects, the American Construction Council, the Associated General Contractors, employers' associations of several of the building trades and builders' organizations of New York, Philadelphia, Cleveland and Rochester.

The discussions disclosed that at that time only 77 per cent of the men required in the building trades were available.

The principal reason for this shortage was alleged to be the neglect of the employer to engage the number of apprentices he could use and the failure to provide for their proper instruction. The following

are a few of the important recommendations of the conference:

1. That local committees, representing all interests in the building industry, are essential to determine the need for apprentices and supervise the required training.

2. National trade associations should be responsible or setting up training standards for apprentices.

3. Coöperation with the public schools is essential in vocational guidance, testing of physical and mental fitness of candidates and the giving of training.

4. Pre-employment training, followed by part-time training to supplement experience on the job, should be provided.

5. Training for the whole trade is needed more than training for a specialty.

6. It should be recognized that there is a wide difference between training for shop trades and training for the building trades.

As a result of this conference a national apprenticeship program has been launched by the American Construction Council, which is the national body representative of all the elements in the building industry, which is trying to harmonize the various factors into a coherent, compact, coöperating body and is made up of architects, manufacturers of building materials, officials of labor organizations and employers' associations, as well as insurance, real estate and financial men interested in the building industry.

Within the past two years the National Association of Master Plumbers has prepared a tentative plan to provide a national program for training apprentices.

Their plan requires apprentices to attend some vocational training school under the direct control and guidance of an apprenticeship committee. At the present time the Board of Public Education of Pittsburgh is making extensive alterations to a centrally located school building to accommodate the number of apprentices to be trained and to provide the necessary space and equipment required to properly train them in accordance with the course of instructions approved by the Master Plumbers' Association.

A survey made by the master plumbers covering 180 cities of all sizes in thirty-five states from Maine to California showed 20,290 journeymen plumbers and 2,969 apprentices or one apprentice to every 6.8 journeymen.

If a survey of sheet metal workers were made it is likely that the percentage of apprentices employed would be lower rather than higher.

A survey of sheet metal apprentices in Pittsburgh disclosed the fact that there are sixty-four apprentices employed to 435 journeymen or approximately 1 to 7.

This survey further showed that of 100 shops thirty-nine employ apprentices and sixty-one shops employ no apprentices.

This is a serious condition and can only be remedied by the sheet metal contractors who do not now employ apprentices assuming their share of the work in the training of apprentices if they expect to have the skilled men needed to properly man their jobs.

During the past year the Sheet Metal Contractors' Association of Pittsburgh has put in effect the system of training apprentices in accordance with an agreement entered into with the local union of sheet metal workers.

On October 1st, 1923, sixty-four sheet metal apprentices were registered at the Carnegie Institute of Technology for instruction in sheet metal pattern drafting, mathematics and shop work.

They were divided into four sections and received instruction one day each week, two hours in mathematics, and four hours in drafting and shop work, or, approximately 150 hours during the school year.

As there was no entrance examination required for this course and no two of the group had the same preparation it was impossible to properly grade these classes when first organized.

The mathematics instructor soon

Pension Bureau Building, Washington, D. C.

Courtesy of Baltimore & Ohio Railroad.

The White House as Seen from Pennsylvania Avenue.

Courtesy of Baltimore & Ohio Railroad.

discovered he had a real problem on his hands as over half of these boys were weak and hardly knew fundamentals. Many of them had quit school in the fourth and fifth grades. Some of them had completed the eighth grade and several had attended high school.

Our school records and final grades show that the boy with the better preparation has received the higher grades, made greater progress, and his deportment, attendance and attitude toward school work has been much better than that of the boy with poor preparation.

Of the sixty-four boys registered, nine made the final grade "A" for their school work, thereby earning a reduction of two months on their next eight months' period reducing it to six months and are naturally entitled to an advance in wages two months earlier than the boys who failed to make this grade.

The local union, to show its appreciation of the work done by these boys, has presented each one with a gold button, which they believe, will be an incentive for greater effort on the part of the boys who did not make the highest grade.

The final grades for the year were as follows:

A— 9		
B—10	28	
C— 9		
D—19		
E— 8	27	
R— 7		
Dropped 2		
64		

Of the two dropped from the class one left the trade to follow another line of occupation and the other was of such an unruly disposition that he was called before the apprenticeship committee and reprimanded, but as he showed no inclination to conform to the rules of the school, there was nothing left for the school to do but to expel him, after which there was a marked improvement in the conduct of some of the other boys.

We consider the grade record of this class to be very good when we take into consideration the fact that so many of the boys had such poor school preparation before starting to learn the trade.

There is, however, much room for improvement, which can only be made by using greater care in the selection of apprentices in the future.

Capitol Building, Washington, D. C.

Courtesy of Baltimore & Ohio Railroad.

This naturally brings up the question, "What should be the qualifications of an apprentice?"

1. He should be at least 16 years of age.

2. He should have at least a grammar school education.

3. Possess a reputation for honesty and ambition.

The problem of securing this type of boys is not as serious as you may think, during the months of May and June a number of boys leave school with the determination to go to work, and, with very few exceptions, have no idea as to their future vocation, depending on chance to find the job which will determine their entire future, with the result that many of them are "misfits" for the rest of their lives, and, naturally, our craft has its share of "misfits."

If we give the same consideration to the selection of our apprentices as we do to the purchasing of material or the execution of a particular job, we can get the type of boy that will be a credit to the trade.

During the past year the Carnegie Institute of Technology has received numerous letters from officials of industrial associations and supervisors of vocational education from many sections of the country inquiring for information as to properly organizing and conducting sheet metal classes. In nearly every case they wanted an outline of the apprentice course, the text books used, the sequence of the problems, how the work is presented to the student and information in regard to the Pittsburgh plan for training sheet metal apprentices.

Many of these letters were the result of the wide publicity given the Pittsburgh plan by the many trade and school magazines, which particularly stressed the fact that attendance at school was compulsory and not optional, a fact which would insure the success of the plan.

Much has been accomplished thoughout the country by individuals, Sheet Metal Contractors' Associations and labor unions in promoting the establishment of classes of instruction for apprentices, but it is to be regretted that in many sections no effort has been made to systematically train apprentices.

In several of the larger cities some real progress has been made by the local Sheet Metal Contractors' Associations, in some cases with the coöperation of the local unions of sheet metal workers, in others, independent of the unions, in this respect every community has to solve the problem in such a way as to obtain the best results from their work.

Evidence that organized labor as well as employers are growing more and more concerned about the apprenticeship problem is shown in two recent developments toward training apprentices in the establishing of classes by the Sheet Metal Workers' Union in Miami, Florida, and Los Angeles, California.

But more can be done, much more needs to be done and the logical agent to perform this duty is the

National Association of Sheet Metal Contractors.

This association should outline a plan and adopt a regular program of procedure on the establishment of trade courses, together with a standard course on instruction which would be of the greatest aid to local associations and vocational schools for the instruction of sheet metal apprentices and offer it for use in localities where such training is not now available.

And, further, if this association is not represented on the American Construction Council it should try to obtain such representation in order that we may derive the benefits of the work of that council for our members and to do our share of the work required to promote the best interests of our craft.

A discussion on Mr. Markle's report followed, in which William A. Fingle, Baltimore; George Harms, Peoria; Paul F. Brandstedt, Washington, D. C.; George I. Ray, Charlotte, North Carolina, and others took part, and during which many

John Bogenberger, Chairman, Fire Prevention Committee.

good suggestions were brought out for the local application of the general policy of apprenticeship training.

Frank Cushman, chief of Industrial Education Service of the Federal Board for Vocational Education, spoke on "Vocational Training." This address will be published in a near issue.

An interesting sample of the work done by the students in the 1923-24 class of the Trade School of the Sheet Metal Contractors' Association of Washington, D. C., was the handsome sheet metal arch which stood at the entrance of the conventional hall. It was made under the supervision of H. R. Dampman, director of the school. Other samples were on display in the shop of E. Gichner, 1107 E Street, N. W.

Professor Daugherty, of Carnegie "Tech," gave the general outline of the sheet metal course at this wonderful school and suggesting that the national association adopt a standardized course in sheet metal apprentice training, offering every assistance that Carnegie "Tech" can give.

Wednesday Forenoon Session.

After the reading of the minutes of Tuesday's sessions the resolutions committee made a partial report, which was adopted as follows:

Wednesday's Resolutions.

Whereas—this National Association of Sheet Metal Contractors is cognizant of the abuses imposed on various sub-contractors of the general contractor in the awarding of contracts, therefore

Be It Resolved, that in the interest of the building public and for the protection of all sub-contractors, that the American Institute of Architects be petitioned by this Association to embody in their specifications a clause which will require the general contractor to submit with his proposal the names of all sub-contractors whose respective bids he has used to make up any proposal to either architect or owner.

Whereas—the National Warm Air Heating and Ventilating Association has extended to this Association an invitation to appoint a special delegate to attend their meetings and to take part in their proceedings, therefore

Be It Resolved, that this invitation be accepted and the President appoint a special delegate to attend their sessions and to report back to this Association.

Whereas—it is felt that a point of contact be established between this Association, the American Society of Heating and Ventilating Engineers, the American Institute of Architects, the National Warm Air Heating and Ventilating Association, the American Zinc Institute and other organizations, therefore

Be It Resolved, that a representative of this Association be appointed to work with representatives of these organizations to the end that matters of mutual interest may be discussed and action recommended to the various associations affected for united action.

E. B. Laugenberg, Chairman, Warm Air Furnace Committee.

Be It Resolved, that a committee be appointed whose duty it shall be to assemble printed matter covering the proper construction of Sheet Metal Cornices.

This committee shall be privileged to use any material that the Trade Development Committee may already have prepared on this subject, but so that it can ultimately be set up in the large Sheet Metal Reference Book that this Association is now working on.

This committee shall work in conjunction with similar committees of the various state and local associations to properly distribute and follow up with propaganda, to the end that architects and builders be fully informed on the proposition.

That a sum not to exceed $1,000.00 be appropriated for this purpose.

Whereas—the National Warm Air Heating and Ventilating Association is building an Educational Research Residence in Urbana, Illinois, and

Whereas—we feel that this is a most commendable undertaking and will contribute more to the advancement of warm air heating than anything so far attempted, therefore,

Be It Resolved, that this Association show its appreciation and co-operation by presenting to the National Warm Air Heating and Ventilating Association a Bronze Tablet bearing the name and purpose of the Residence and of

such appropriate design as contemplated.

That the sum of $200 be appropriated for this tablet.

Warren Carter then spoke on "Selling More Sheet Metal and Products, or Applied Salesmanship."

Mr. Carter's address will be published in a near issue.

The New Bureau of Printing and Engraving Washington, D. C.

Courtesy of Baltimore & Ohio Railroad.

George Harms' subject: "The Return of the Prodigal Son," had nothing to do with the Volstead Act, but was listened to with great interest, because he dealt with the revival of the sheet metal cornice. His address is published elsewhere in this issue.

"The Architect's Viewpoint" was given by A. L. Harris, municipal architect of Washington, D. C., in a fine paper, which will be published in a near issue.

Wednesday Afternoon Session.

E. B. Langenberg, chairman of the warm air furnace committee, made his report, which is published in the Warm Air Furnace section of this issue.

E. F. Glore, Chairman of the Educational Research Committee, was prevented from being present by sickness, and in his place Mr. Langenberg outlined some of plans that this committee is working out.

The preliminary work provides for the preparation of short articles giving correct information about house heating, such articles to be furnished to local installers for insertion in daily and weekly papers. Mr. Langenberg stated that early in December, 1924, the Educational Research Residence in Urbana, Illinois, which the National Warm Air Heating and Ventilating Association is having constructed will be dedicated with proper celebration and urged that a representative of the National Sheet Metal Contractors' Association attend, together with representatives of many other organizations.

A sum of $200.00 was appropriated for a bronze tablet to be placed on this residence in appreciation of the great work accomplished for the industry.

Following the report of the Overhead Expense Committee, Mr. Markle moved that the matter of a standardized course for the training of sheet metal apprentices be taken up. After considerable discussion it decided that the resolution presented by the Apprenticeship Committee be returned for further consideration and report at a later session of the convention.

Building Occupied Jointly by the State, War and Navy Departments.

Courtesy of Baltimore & Ohio Railroad.

Report of Labor Committee, by William F. Angermeyer, Chairman.

There has been but little change in labor conditions since our convention in St. Louis one year ago. The tendency in building construction has been for wage increases, particularly in the large cities. These demands on the part of labor have been granted without strikes or lockouts, except in a few instances, and most of these were of short duration. Two years ago the building demand was the most direct stimulant for wage increases; this year it seems that labor itself, rather than the demand for it, has taken the initiative.

There have been no important decisions from the United States courts affecting the relation between employer and employee, except that possibly of the Supreme Court of the United States in the Kansas industrial court case. This decision declared that the right of labor to organize and engage in strikes, and the right of employers to determine conditions of employment are constitutional rights which the legislature cannot destroy in private industry by any scheme of compulsory arbitration. Private industry, in view of this decision, must largely work out its own salvation, subject to legal protection of life, liberty, property and contract.

No important decision of any state court has been brought to the attention of your committee.

Opposed to Five-Day Week.

The general trend, for several years, of all court decisions, has been to hold labor organizations, although they will not incorporate, responsible for their acts.

The cases submitted to the National Board of Jurisdictional Awards, in so far as they affect the sheet metal industry, have been only minor ones, and nothing new of any

special importance in our trade has been before that body. The old fight as to who shall set metal trim, etc., goes on. So far as the carpenters abiding by a decision is concerned, it is the old illustration of leading a horse to water, but not making him drink.

There is a tendency to eliminate work on Saturday, and come to a five-day week. We believe this is an economic mistake, as it will only increase the cost of production, and give nothing in return.

The only recommendation that your committee has to make would be that the convention go on record as opposing the five-day working week.

The report of Walter Tinney, Philadelphia, for the overhead expense committee, was next on the program.

Report of Overhead Expense Committee, by Walter H. Tinney, Chairman.

The members having a factory or shop for the manufacture of a piece of sheet metal work should keep an

Joseph C. Gartner, Fourth Vice-President.

accurate account of the cost of the various items of overhead that cannot be charged direct to the particular job, such as: Rent, or interest on cost of building, heat, light, stationery, telephone, power, fire insurance, compensation and public liability insurance, general supervision, clerical and porter service, hauling charges, or costs of maintaining delivery services, such as trucks and motor equipment for the use of supervisors, entertainment and other incidental expenses, which your committee think should be carefully recorded and totaled at least once each month, which, when assembled, can be divided on a percentage basis with the amount of business done during that period, thereby arriving at an approximate amount which, when added to the cost of labor and material, plus profit, will give the selling price of the particular piece of work estimated on.

For example: If the total cost of items enumerated would be $2,000 per month, doing a business of $10,000 during the same period, and a gross profit of $3,000, before any profit is received from the sale, we must deduct $2,000 expenses incurred, leaving a net profit of $1,000, or 10 per cent.

In figuring new business, take the following:

Cost of material	$ 4,000.00
Labor	3,000.00
Expenses or overhead	2,000.00
	$ 9,000.00
Profit 1-9 to get 10%	1,000.00
Selling price or bid	$10,000.00

There has been considerable discussion as to the advisability of placing the same percentage of overhead on all jobs regardless of the kind of materials used, because of the vast difference in the price of materials, such as galvanized iron on one job and copper on the other, which question should be carefully analyzed.

We will compare by the following example:

Cost of galvanized iron	$1,500.00
Cost of labor	1,500.00
Total	$3,000.00
Plus O. H., 33⅓%	1,000.00
Plus 1-9	$4,000.00

Estimate.

Same amount of material and labor.

Cost of copper	$4,500.00
Cost of labor	1,500.00
	$6,000.00
Plus O. H., 33⅓%	2,000.00
Plus 1-9 profit	$8,000.00

Selling price.

Showing that the man who uses copper on his building is being penalized for using a better quality of

Paul L. Biersach, First Vice-President.

material. Now, if the overhead was placed on the labor only, we find the following:

Cost of copper	$4,500.00
Cost of labor	1,500.00
Plus O. H. 66⅔% on labor	1,000.00
	$7,000.00

You find from the above that adding the overhead to labor only is the most equitable and also the easiest method.

Now we come to the firm who erects its material on the building. It will also have to carefully analyze the various items of overhead that are not chargeable directly to the job, such as lost time in going to and from the shop, superintendents, hauling, compensation and public liability insurance, loss and use of tools and equipment and other small items, which all totaled up make a good sum and should be carefully recorded so that in figuring overhead on an estimate everything will be covered to prevent the small leaks that so often cause, instead of a

profit on the year's business, a loss in so many cases.

Your committee would recommend the use of the standard form adopted by the national association for ascertaining the cost of conducting business. These forms can be secured without cost from the national secretary.

The report of the fire prevention committee, prepared by John Bo-

Arthur P. Lamneck,
Trustee.

genberger, Milwaukee, was read by his partner, Paul L. Biersach.

Report of Fire Prevention Committee.

A resolution was adopted at the St. Louis convention, 1923, as follows:

"Resolved, that in an effort to increase the use of sheet metal roofing, the recommendations of the fire prevention committee be complied with in regard to the testing of various types of metal shingles and tin roofing by the underwriters laboratories, with a view of using the data and reports of these tests in an advertising campaign to prove to the public the superior fire retardent qualities of sheet metal roofing as compared with wood and composition shingles. We recommend that in order to properly place before the manufacturers of metal shingles and other sheet metal roofing materials the advantages of having tests made, and to solicit their financial support, the entire matter be placed in the hands of the fire prevention committee."

Your committee on fire prevention met on December 5th, 1923, at Chicago. After a short session, the committee adjourned to the Underwriters Laboratories, Inc., and had the subject matter of metal roof classifications under discussion with the engineers having this matter in charge. We found that the laboratories had already classified slate roofing, tile roofing, and all forms of sheet metal roofing in class A. There are also some of the composition roofings, mainly those which are built up with asbestos that are in class A roof covering. There are other types of composition roofing which are in class D and in Class C.

Fire Insurance Bulletin.

The New York Fire Insurance Exchange issued a bulletin called, "Rating Rules, Series No. 37," which reads as follows:

"Standard Roof Coverings."

"The following are the kinds of standard roof coverings for which no charge is made in ratings under any schedules of the exchange:

1. Metal or slate roofs in good condition.

2. Any roof, the materials of which have been labeled as class A by the underwriters laboratories and which have been laid in accordance with the requirements of such class.

(It will be necessary to demonstrate to our inspector that all the materials have been so labeled and that the workmanship is in accordance with the requirements.)

3. Any built-up five-ply composition roofing covered with slag or gravel, the materials and construction of which comply with recognized standards."

The committee also found that the sheet copper manufacturers and sheet zinc manufacturers had already taken fire tests which proved satisfactory, and, therefore, the laboratories had come to the conclusion to place metal roof coverings in class A. Your committee also secured a letter from A. R. Small, vice-president of the underwriters laboratories, under the heading of metal roof coverings, which is to be considered as informal and reads as follows:

"1. I am glad to comply with the request you made during the recent meeting at this office and dictate the following informal comments covering the status of metal as a roof covering, especially from the point of view of a fire protection and fire retardent classification.

"2. Very generally, it is the practice of fire underwriters and of rate making bodies to consider buildings having walls of brick as representative of the basic or standard construction and buildings having walls of other materials are judged with brick as the standard of comparison; the outcome of such judgment may be favorable or otherwise, but brick continues the yard stick as it were.

"3. Similarly and because of their familiarity with its use and with its performance under fire conditions, underwriters and rate making au-

David M. Haines,
Retiring Third Vice-President.

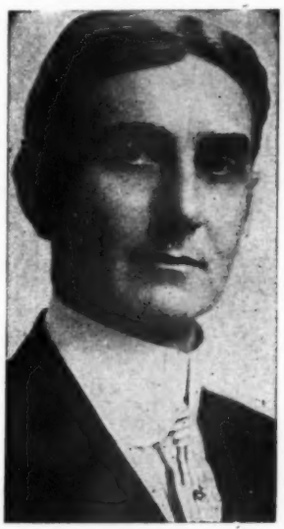
thorities very generally regard metal roof coverings as standard and as one instance of this kind, Mr. Pierson handed you, at the recent meeting, a copy of a bulletin from an important rate making body in which metals with slate and tile were classified as standard roof coverings; this classification applies practically without further consideration. It seems to be unnecessary for them to take into account the producer of the materials going into the roof assembly or the qualifications and ex-

perience of the installing contractor. By and large, and taking them altogether, they seem to be satisfied to accept a roof covering of metal as standard without going into details.

"4. Other forms of roof covering are frequently required to be classified as to extent of fire protection they afford or as to the degree of hazard which they represent. Such classifications are regularly published by underwriters laboratories as the result of examinations and tests. Many varieties of so-called prepared roofings are so classified and the classification now in use recognizes three grades, A, B and C. Roughly speaking, grade A is contemplated for buildings in the congested districts of cities; grade B for surrounding territory within the fire limits, and grade C for buildings in smaller communities and in the suburbs of large cities outside of the fire limits. Some variations of the application of this classification plan are found in various communities, these variations usually originate in the adoption of ordinances by city councils or in the building code requirements.

"5. At the request of the National Fire Protection Association we classified a metal roof covering construction conforming to the N. F. P. A. standard. The investigation and tests resulted in an "A" classification. Similarly we have classified various assemblies of roofing felt or of pitch or asphalt with gravel or other similar coverings as "A". There are a number of proprietary types of roof materials which have been tested and classified as A, B or C, according to test performances; some of these using asbestos getting an "A", others "B", largely depending upon the amount of asbestos and upon the method of installation. The story is fairly well told in the enclosed copy of the July, 1923, edition of our list of *Inspected Mechanical Appliances* beginning on page 93 to 99, inclusive.

"6. Conflagrations, such as the recent one in Berkeley, California, have time and again demonstrated community fire hazards which the wooden shingles present. Fire preventionists quite generally and fire insurance people to some extent in recognition of this have encouraged the substitution of other forms of roof coverings for these not having the inherent property which make the wooden shingles so undesirable from the fire point of view. The so-called asphalt shingle seems to be the product most successfully replacing the wooden shingle. Presumably this is on account of the relative cost. Many manufacturers, contractors and builders look to our reports



John H. Hussie, Trustee.

and to our label service as a means of classifying and identifying asphalt shingles which are judged to have sufficient merit to warrant an "A" classification, and, therefore, are presumably to be preferred from the fire protection point of view. Certain new forms of roof coverings coming on the market and intended to compete for the class of business which is ordinarily given to prepared asphalt shingles find it desirable from a sales promotion point of view to have the product tested and similarly classified. This seems to be the case even with certain forms of metal shingles which, at least, roughly speaking, would ordinarily receive a classification as a metal roof covering, in any event. It might be that your members were to undertake an energetic campaign for the introduction, installation, and use of metal shingles they would find it desirable from a few angles to have such a classification and perhaps a label service, just as the asphalt shingles have. On the other hand, I can readily see that this might not be demanded by the trade if the fact that shingles were of metal and the complete roof covering also was of metal was properly emphasized.

"7. I suggest that in the preparation of your report you do not forget that no one of the staff or the officers of underwriters laboratories is particularly informed regarding the practice of fire insurance rating organizations as to credits or charges and any statements that are made in your committee report having to do with rates should be on the basis of statements or information from authoritative sources. Mr. Nichols of the Wisconsin inspection bureau would undoubtedly be glad to advise as to the practice in his state and can probably put you in touch with officials in other communities having jurisdiction corresponding to his own in Wisconsin.

"8. If it occurs to you that there are other phases or features in your report in which I can help by discussion or comment, do not hesitate to call upon me.

(Signed) "A. A. SMALL."

Your committee wishes to submit this report to the convention and recommends that all sheet metal contractors, manuacturers of shaped metal shingles and others who may be interested in metal roof coverings, should take this matter up with their local boards of underwriters having jurisdiction and get special recognition from them relating to fire insurance rates when this class of roofing material is used. You will please understand that the underwriters laboratories do not make the rates. They only decide on classifications of various materials used for fire proofing. Your committee was fortunate enough to get a hearing with the underwriters laboratories' engineers on this subject and collected the information contained in this report without any expense to National Association of Sheet Metal Contractors.

Secretary Seabrook, who is also chairman of the committee on trade relations and policy, read the report of this committee, as follows:

Report of Trade Relations and Policy Committee, by E. L. Seabrook, Chairman.

The complaints which have reached your committee in the matter of direct sales during the year have been few. Complaints, in a general way without being specific as to facts, have been less than in previous years. There seems to be a gradual change of attitude on the part of many sources of supplies to confine their sales to one channel; i. e., if they are jobbers to sell almost entirely to the retailer, or to those who use their product, in some manufactured form. This is encouraging in several ways.

Many are advertising—"We sell to the trade only" or some similar expression, to convey the idea that they do not sell the consumer. At a recent meeting of the metal branch of the National Hardware Association the question of mills shipping in less than 50-bundle lots was under discussion. The representatives of many mills declared they had eliminated this practice, and did not care for this class of business. This is encouraging, as one of the contentions of the jobber has been that the sheet metal contractor was buying direct from the mills in small quantities, thus depriving the jobber of legitimate business.

The sheet metal contractor and the source of his supplies have been getting closer together, particularly in the last three or four years. State conventions have afforded an opportunity for a larger number of contractors and jobbers to meet each other than is possible at national conventions. Nearly every state association has a salesmen's auxiliary connected with it. These are some of the features that are working out the solution of years old problem of direct sales.

Standardization and Simplification.

As this committee is the connecting link between the association, its members, and manufacturers and jobbers, it feels justified in calling the attention of this convention to some features that are beginning to assume proportions worthy of consideration. One of these is standardization or simplification of certain manufactured products. While there is a joint committee on standardization, only one section (that of warm air furnace accessories) has been able to function, because the manufacturers have not been able to get any definite action among themselves.

A prominent terne roofing plate manufacturer makes the statement that he must produce 1,304 varieties

R. E. Pauley, Retiring Trustee.

to serve all the demands made upon him. Think of the amount of capital unnecessarily tied up, and how much this increases the cost to all on terne plates. This is only one example of the glaringly bad habit which pervades the sheet metal industry.

When we enter the field of elbows, shoes, conductor pipe and eaves trough we find even a worse condition. The manufacturers of conductor pipe elbows carry approximately 1,800 different pieces of various sizes, angles, gauges and materials; 502 sizes, gauges and materials of conductor pipe, eaves trough and ridge roll; 160 of mitres, end caps and fittings of that nature. From this it can readily be seen that eliminations could certainly be effected in such a varied stock as it is necessary to carry.

Light weight material, and the lack of any publicity in favor of sheet metal are being brought sharply to the attention of manufacturers and jobbers by some of their own number. L. D. Mercer, of the Berger Manufacturing Company, read a straight from the shoulder paper on these two subjects before the convention of the New England Federation, Sheet Metal Contractors, last month. Mr. Mercer did not mince words in the least, nor offer any excuses for those who were shading the gauge weights in order to lower the price, and incidentally reduce the cost.

The high spots of this paper will be published in the July *Journal*, but it is not out of place to quote one or two pertinent passages.

"We offer it as our deliberate judgment that the first thing necessary to correct some of the evils which have crept into our industry is for you and us to join whole heartedly in a national sales promotion campaign that will restore sheet metal to its rightful place in the minds of potential buyers throughout the country."

"If you will stop for a moment to compare the advertising done by those products competing with sheet steel products, you will be dumb founded, if not paralyzed with the incredible fact that the sheet steel industry as a whole, excepting one or two mills, has done nothing at all, and are not doing anything at all, along constructive lines."

"The next step in the standardization of sheet steel is the radical and speedy elimination of the growing practice of making and selling of gauges of material too light for the purpose intended."

"Another step in the standardization of sheet steel should be the elimination of about one-half of our present range of gauges, sizes and finishes. As a matter of fact, the people of America are contributing to the high prices of today by demanding a complexity of articles in a vast multitude of varieties and sizes."

Can this convention do less than

put itself in accord with these statements, coming, as they do, from one of the largest manufacturers and distributors in our line. Several state associatoins have put themselves on record as favoring simplification, and the use of heavier materials.

Your committee recommends that the convention re-affirms its stand that the natural channel of distribution of supplies is from the manufacturer to the jobber, from jobber to retailer, and retailer to consumer.

That the convention go on record as favoring a general publicity campaign to bring the merits of sheet metal products to the attention of the public.

Resolution.

Your committee offers the following resolution, and recommends its adoption:

"Resolved, That this convention is heartily in favor of eliminating all kinds of conductor pipe, eaves trough and fittings in weights less than No. 28 gauge galvanized. The convention also favors the elimination of any angles, sizes or kinds of these materials which the manufacturers agree can be eliminated with no disadvantage to the sheet metal industry.

Dr. John P. Wagner, Dowagiac, Michigan, delivered the closing address of the afternoon session. His address on "The Ethics of Our Business," is published in the Warm Air Furnace section of this issue.

In the evening the delegates, ladies and other guests visited the wonderful Congressional Library.

Thursday Session.

The Thursday session was called to order at 9:30 a. m., the minutes of Wednesday's sessions being read followed by a partial report of the Resolutions Committee.

The report of the Vocational Education Committee was read by Secretary Seabrook in the absence of the Chairman, H. A. Daniels, Newburgh, New York.

Reports were rendered by the State Associations of Florida, Georgia, Nebraska, Minnesota, Maryland, Kentucky, Indiana, Iowa, Illinois and Ohio, all showing considerable progress both in growth of membership and in the matter of the use of better material, and especially in having the sheet metal contractor regard himself as a real business man.

D. M. Strickland, of the American Rolling Mill Company, spoke on the coating of sheets. He gave a very interesting and didactic address which was appreciated by all who heard him.

George Harms then made the report of the standardization committee as follows:

Report of the Standardization Committee.

Your committee attended two meetings, one in Chicago and another in New York city. The standardization of registers and furnace pipe was considered.

W. A. Fingles, Trustee.

The first meeting in Chicago was attended by representatives of the National Warm Air Heating and Ventilating Association, the Western Warm Air Furnace and Jobbers' Association and the manufacturers of registers, furnace pipe and fittings.

As a large number of duplicating sizes of registers and fittings are made, causing both trouble and expense to the manufacturer, dealer and consumer, it was deemed advisable to determine on an accurate size for both floor and side wall registers and fittings for same, these to harmonize with good mechanical practice and to be in proper proportion to each other.

The following round pipe sizes are of general use. Therefore, were given first consideration: 8-inch, 9-inch, 10-inch, 12-inch, 14-inch.

Floor registers to be following sizes:

8x10 for 8-inch round pipe, 9x12 for 9-inch round pipe, 10x12 for 10-inch round pipe, 12x15 for 12-inch round pipe, 14x18 for 14-inch round pipe.

The following boot openings were recommended for side wall registers:

8-inch round pipe 6⅛x10⅝ outside size of double pipe.

9-inch round pipe 6⅛x12⅝ outside size of double pipe.

10-inch round pipe 7⅛x12⅝ outside size of double pipe.

12-inch round pipe 9⅛x13⅝ outside size of double pipe.

14-inch round pipe 9⅛x14⅝ outside size of double pipe.

Another meeting was held in New York city, at which the manufacturers of registers and also of furnace pipe were represented by at least 75 per cent of the entire production of this country. The other associations were again represented. At this meeting it was demonstrated that the manufacturers cannot sacrifice their individuality in design nor style, but that a standard should be adopted for each size and be put in effect as soon as present stocks can be reduced and the necessary changes be made in dies, also the manner of manufacture.

The sizes recommended at the Chicago meeting were then adopted.

Your committee recommends that this association adopt these sizes, as they are mechanically correct and in line with good heating practice.

We further recommend that the members of this association insist on the use of standard sizes at an early date and we also recommend that a vote of thanks be tendered the other associations, who worked with us, also to the manufacturers of registers, furnace pipe and fittings, for

their participation and coöperation in this movement.

It was also agreed to appoint a committee on the change of by-laws.

E. C. Barrett made the report of the joint committee on publicity.

The trade development committee, which made its report Thursday morning, reported a great deal of progress. It also reported the employment of a man for collection of material for data book which is to be published in 1925. J. S. Thesmacher, of New York city, was employed by committee.

There were $2,500 appropriated for the use of the trade development committee.

A resolution was passed endorsing the law to enfranchise citizens of the District of Columbia.

A resolution was passed to have an apprentice committee prepare a standard course for the training of apprentices.

Resolutions were passed by the association thanking the Hotel Raleigh for the splendid service to the delegates, and to committee on entertainments for the enjoyable reception the delegates received.

Resolutions of appreciation were passed of the work of the late Frank K. Chew and Frank B. Higgins.

The banquet, which was held Thursday evening at the Raleigh Hotel, was a splendid success. There was fine music, wonderful speeches on Americanism and happiness to be found in service.

George Thesmacher, of Cleveland, presented retiring President Pierpoint with a beautifully engraved gold watch after dinner.

Business was suspended at 11:30 to make a call at the White House, after which the Annual Outing to Mt. Vernon, which was as usual a splendid success.

Thursday's Resolutions.

Resolved, that the name of the Association journal be changed to read "The National Heating and Sheet Metal Contractor."

Resolved, that a committee be appointed to coordinate trade promotion work and that $1,000.00 be appropriated for the expenses of this committee.

Resolved that a committee be appointed to select a suitable slogan for the Association and that $25.00 be appropriated to be used for a prize to the proposer of the slogan adopted.

Friday's Session.

The resolutions committee reported again early Friday morning.

This was followed by the executive committee report and general discussion. The mapping out of future work and future policy for the National Association was accomplished.

Election of Officers.

The election of officers resulted as follows:

President—W. C. Markle, Pittsburgh.

First Vice-President—Paul L. Biersach, Milwaukee.

Second Vice-President — Walter Budd, Durham, North Carolina.

Third Vice-President — A. N. Lichty, Waterloo, Iowa.

Fourth Vice-President — Joseph C. Gardner, Indianapolis.

Secretary—E. L. Seabrook, Philadelphia.

Treasurer—Julius Gerock, St. Louis.

The trustees appointed for three years are: John Pierpoint, Washington; J. E. Merrick, Louisville; W. A. Fingles, Baltimore.

Those for two years are: George I. Ray, Charlotte, North Carolina.

The retiring trustees are Fingles, Pauley and Hiller.

Ladies' Auxiliary of Washington Provides Excellent Entertainment for Wives of Visiting Delegates.

Sight-Seeing, Shopping Tours and Visit to Mount Vernon Were Features of Ladies' Entertainment Program.

NO convention can be voted a complete success where no provision is made for the entertainment of the wives, mothers and daughters of the visiting delegates.

The Washington convention was no exception to this rule. Nor would any convention report be complete which did not fully chronicle the events of interest for the visiting ladies.

If anything the members of the fair sex are even more enthusiastic than are the men when it comes to taking an active interest in the happenings of the convention wherever they are permitted to participate.

The Ladies' Auxiliary of the Washington Association had a well arranged program of entertainment for the visitors.

Tuesday, June 17th, the visitors attended the opening of the convention. At 1:30 p. m. they were taken in hand by the Ladies' Auxiliary and were treated to a sightseeing tour to points of interest in the nation's capital. Among the places visited were Washington's Monument, that most interesting needle which projects itself into space for 555 feet; the Lincoln Memorial, heralded as America's finest monumental structure; the National Museum of Nat-

The Tomb of Washington to Which Thousands Make a Pilgrimage Each Year.

Courtesy of Baltimore and Ohio Railroad.

ural History, as well as many other public and governmental buildings.

In the evening they attended the reception, dance and general get-together at the Raleigh Ball Room.

Wednesday, June 18th, the morning was occupied with a continuation of the sightseeing tour, also under the most efficient guidance of the Ladies' Auxiliary of the Washington Association.

In the evening a visit was paid to the Congressional Library in company with the male delegates.

Thursday morning, June 19th, the ladies were given one of the delights of their young lives when they were taken on a shopping tour through the merchandising section of the national capital. Washington is generally thought of and associated with politics and political matters for the simple reason that most of the news coming from that city is of a political nature. However, some of the finest shops in the country are to be found here, and so it is needless to say that the ladies enjoyed their tour of the commercial districts immensely.

Thursday afternoon was reserved for the trip of trips, the climax, and a very fitting one, of all tours—we must take it out of the category of sightseeing, because it is more than mere satisfaction of curiosity; the trip to Mount Vernon is a sacred pilgrimage of the American to America's Mecca.

The trip also included a visit by motor to Rock Creek Park.

The official photograph of the Washington Convention delegates was taken at Mount Vernon. The wreath was placed upon the tomb of Washington at this visit.

In the evening the ladies attended the banquet at the Hotel Raleigh.

Friday, June 20, the ladies were permitted to go where they would, but were advised to go where they had not been.

To the Ladies' Auxiliary of the Washington Association is due great credit and thanks for the manner in which they provided for the ladies' entertainment during the latter's visit to Washington, D. C.

Washington's Mount Vernon Home, the Bridge Between the Dead and the Living.

Courtesy of Baltimore and Ohio Railroad.

Seen and Heard

G. F. Stanton, General Sales Manager of the Baltimore Copper Smelting & Rolling Company, conducted a large party of the delegates through the company's wonderful plant in Baltimore on Thursday, where they saw the complete process of making raw copper into sheets and wire. Both Mr. Stanton and H. R. Hodges had plenty to do visiting with their many friends and customers of the company.

H. K. Wilson, who is one of the five members from Springfield, Illinois, who attended, makes it a point to listen to all the reports and addresses. He comes to conventions to learn and he always goes away with a better appreciation of his opportunity and duty to his fellow contractors.

C. H. Schecter, Manager of the Syracuse Branch of the Lennox Furnace Company, was present and in spite of the hot weather kept on talking "Torrid Zone" to everybody he could stop long enough to listen to him.

W. J. McLean was present to say a word or two for American Brass Company, and he kept talking most of the time. He sure has a fine vocabulary.

For years past remembrance B. J. Jacobs has attended sheet metal conventions, and he does not look a day older since the day he sold his first barrel of National Tinners' Red. Assisted by S. T. Thompson, A. E. Brooks, and Jack Kearney he was kept busy passing out handsome watch safety chains and saying a good word for the National Paint & Varnish Company. He came up from Louisville with the St. Louis "bunch" and did his full share in keeping everybody in good humor.

The discussions following the various papers showed that there was an unusual interest and deep understanding of the things with which the sheet metal trade is confronted.

"Pop" Henninger was as busy as the proverbial hen with one chicken. He distributed cards to the sheet metal contractors inviting them to Room 104, where a fine memo book and the usual swab brushes, their new catalogs and other useful things were given out for the J. M. and L. A. Osborn Company. Tony Howe and Mrs. Howe bossed the job.

William Schwartz, of the Kant-Break Ladders, Incorporated, was on hand to tell about his fine ladder.

George Harms, the Handy pipe man, was busy on half a dozen committees, but found time every little while to tell about that new grandson of his, son and heir of Bill Harms, of the Rock Island Register Company.

The two-thirds of the TeeBee A. E. F. team had a reunion, but did not do their black face stunt. Bill Laffin had his "better half" with him, but Trow Warner played solo.

E. B. Langenberg, the front rank "devil," has a brand new Studebaker, and he is going to drive to Michigan for his vacation and back

to St. Louis. He has bought every kind of polish and sponge and chamois skin that are on the market, and if any fellow squirts a bit of mud on that car, "E. B." stops right away and washes it off.

F. G. Sedgwick and his chief of household took an active part in the business and social programs of the association, taking time off to say a good word for the Waterman-Waterbury Company's steel furnace.

"Pete" Johnson, the Champion furnace pipe man, is dead sure that an automobile highway robber was waiting for him about forty miles west of Washington when he was driving into town, but he evaded him by breaking the speed limit.

A telegram was sent to "Judge" George P. Werner, Galveston, Texas, expressing hope for his restoration to good health. This is the first annual convention that the "Judge" has missed.

To Paul F. Brandstedt and the other members of the Washington Local Committees, great credit is due for the splendid program they arranged for the Convention and the manner in which its plans were carried out. They certainly did a fine job. Here is the complete roster of the two committees:

Gentlemen's Committee.

P. F. Brandstedt, Chairman, 220 John Marshall Place N. W., Joseph A. Daly, W. L. Gary, Ernest Gichner, S. F. Gardner, Max Walten, S. C. Breneman, Charles Ockershausen, Joseph Apolonio, John A. Koons, Charles E. Coberth, Harry Johnson, M. A. Hedderman, E. E. Stacey, Bruce Branson, J. C. Flood, Charles W. Easterday, John Cavanaugh, W. R. Rose, John A. Pierpoint, Walter Kraus, J. D. Thompson, Philip Moorhead, A. B. Poore, Secretary, 1802 Eleventh Street N. W.

Ladies' Committee.

Mrs. J. A. Pierpoint, Chairman, Mrs. P. F. Brandstedt, Secretary, Mrs. Joseph Daly, Mrs. Max Walten, Mrs. Harry Johnson, Miss Mildred Pierpoint, Mrs. Charles Ockershausen, Mrs. Joseph Apolonio, Mrs. Harry Pierpoint, Mrs. Walker Gary, Mrs. Philip Moorhead, Mrs. Ernest Gichner, Mrs. S. F. Gardner, Mrs. John A. Koons, Mrs. M. A. Hedderman, Mrs. J. D. Thompson, Mrs. Walter Krauss, Mrs. W. R. Rose, Mrs. John Cavanaugh, Mrs. C. W. Easterday, Mrs. J. C. Flood, Mrs. Bruce Branson, Mrs. E. E. Stacy.

The entertainment on Tuesday evening was enjoyed by a large number. First there was instrumental music, followed by vocal solos and a real comedian. Next came a moving picture showing the manufacture of copper sheets, described by a representative of the Baltimore Copper Smelting and Rolling Company. It was a highly entertaining and instructive feature. A picture produced by Lyon, Conklin and Company, also of Baltimore, followed showing the superior fire retarding quality of sheet metal roofing, also accompanied by a lecture.

The closing part of the program was a dance in which such mature men as Langenberg, Brandstedt, Thermacher, and Biersach showed their staying qualities in competition with Frank Warner, Bill Augermyer, Louis Luckhardt, Bill Laffin and others.

Many of us have heard the two Schlitz boys referred to as "The Two Apostles—John and Paul"—have real competition in the Washington teams of John Pierpoint and Paul Brandstedt. Some of these days we ought to have a real battle between these two teams.

The Chicago Elbow Machine Company had a splendid exhibit.

The L. D. Berger Company also had an attractive exhibit of their wares.

George Harms Says Sheet Metal Cornice Can be Made Regular Building Trim Once More.

But He Warns Against Use of Light and Poorly Made Material and Too Much Ornamentation.

THE following is a report of the address delivered by George Harms on the subject of "The Return of the Prodigal Son" before the annual convention of the National Association of Sheet Metal Contractors in Washington, D. C.

Mr. Harms is known as authority on furnace work, but he learned the sheet metal workers' trade as a young man and occupied the position as foreman of the sheet metal shop operated by the hardware firm of F. Meyer and Brother, in Peoria, Illinois, which has grown into the furnace pipe manufacturing organization of F. Meyer and Brother Company, and incidentally the company still does a lot of sheet metal contracting in Peoria, so what Mr. Harms says in the following is spoken by a man who knows whereof he speaks, from actual experience:

The Return of the Prodigal Son.

I am quite sure when I mention my real subject that many will say, "Harms, you may be all right as a hot air merchant, but your knowledge of this subject is somewhat doubtful."

Some people may think that the subject I am to talk on is dead, but I believe that it can again be resurrected and, when this is done, become a real live proposition for the sheet metal industry in general. To be able to talk to you intelligently and give you not only my own ideas, but those of other sheet metal contractors, I prepared a questionnaire, which was sent out to cities in every section of our country. The number of replies to this questionnaire was really beyond my anticipation, and came from Maine to California, and from New York to Oregon.

This questionnaire is as follows:

1. Are you interested in the manufacture and sale of sheet metal cornices?

2. For how many years?

3. As it is a fact that galvanized or sheet metal cornices are not used as extensively as they were in the past, will you state what, in your opinion, is the reason?

4. Do you believe that this class of work can be made profitable to the sheet metal contractor?

5. Do you believe that sheet metal cornices can be made and created so as to be not only ornamental but also fire retardent and of lasting quality?

6. What, in your opinion, must be done to have architects specify sheet metal cornices and owners of buildings to accept them?

You will thereby notice that it is my intention to talk to you on *Sheet Metal Cornices* for buildings, and following along the line of the questionnaire, I will at first try to give a short history of the sheet metal cornice.

2nd. Why this industry is dead.

3rd. How do sheet metal cornices compare with those made of stone or terra cotta?

4th. Is there any advantage in the use of sheet metal cornices to the owners of buildings, and can it be made profitable to the industry?

5th. What should be done to again have architects specify sheet metal cornices and the owners of buildings to accept it?

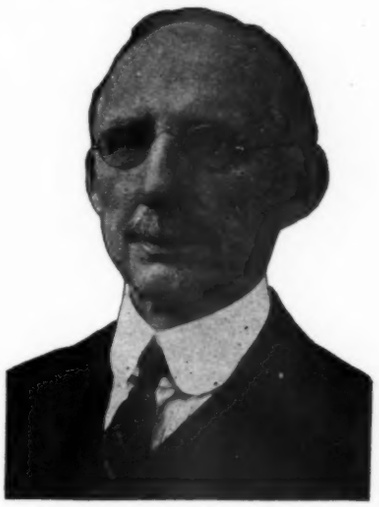
Some Personal History.

1. I want to give you a short history which will show you my connection with this class of work.

About thirty-seven years ago I entered the employ of F. Meyer and Brother, Peoria, Illinois, as foreman of their tin shop. With my limited knowledge of the business, I was able to supervise the work generally done in a small tin shop, such as tin roofing, spouting and repair work, and was quite efficient in the manufacture of tinware. Our shop was equipped with an eight-foot cornice brake, a cornice or section bench and a drafting table, tee square, etc., and cornice work was one of the lines that had been taken care of in the shop before my time.

I managed to secure several contracts requiring galvanized iron cornices and in estimating this work I depended largely on guesswork and what I could learn about prices that others were asking for this work.

The natural result of these first jobs was that they were not very profitable. It was necessary to engage a cornice cutter, and as I did not understand this part of the business, my supervision of this branch was of very little value. I determined thereupon to study and learn



George Harms, Trustee.

as much as I could and bought a metal worker pattern book, and I sat many a night and until early in the morning studying this book, drawing cornices and cutting patterns. On account of a disagreement with our cornice cutter, he left our employ and I decided to tackle the next job that came along.

Job Still in Good Condition.

The first I did in this line was a one-story building about thirty feet frontage, for which we made galvanized iron from the foundation up, and although this job was not strictly architectural, I was proud of my work just the same, and as the building is still standing, and the cornice in the same condition we placed it at the time, it shows it was put up about right.

Since that time I have planned many complete galvanized iron fronts, and have not only laid out and cut all of the patterns, but helped to make and erect many jobs.

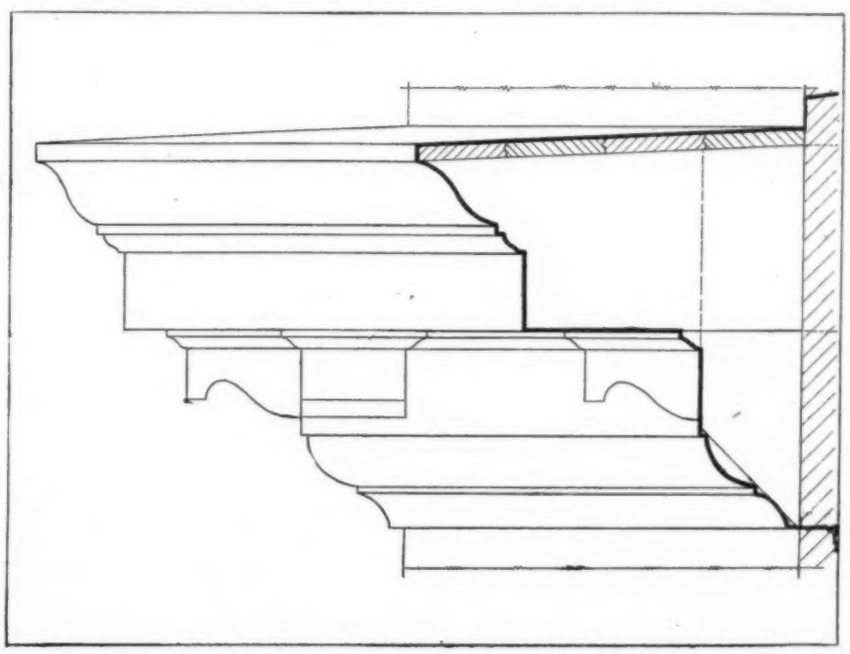
I mention the above to show you I personally had some connection with the manufacture and sale of sheet metal cornices. It is a fact, however, that this material has been used many years prior to the time that I mention the above.

2. Why this industry is practically dead.

Although the answers to the questionnaire differ considerably, they at the same time dwell on the fact that sheet metal cornices were not built in the proper manner, and that slovenly work had much to do with the discontinuance of its use. While this is true to some extent, I believe that the main reason was the change of styles.

Style Changes.

Where formerly buildings were constructed, using large amount of ornamentation both inside and out-



How the Sheet Metal Cornice Appears.

side, there came an era of simplicity which required very little ornamentation, mouldings, etc. That these changes in style affect an entire country is best demonstrated by the clothing that we wear. Although men's clothing has not changed very much, at the same time the high hat was worn by doctors, bankers, merchants and others for regular street wear. Now to see one of these is an open dare for the American boy to see how well he can throw. Frock coats, that were formerly "all the go," are hardly worn at all, and who would consider wearing high top boots? Ladies' dress has changed much more. Formerly, brooms were hardly necessary to sweep sidewalks, as the dresses of our ladies were sufficiently long to take care of this. To prevent them from stepping on their own dresses, it was necessary to wear large hoops, and you would only see my lady's shoe in the shoe store. Gradually, however, this has changed through proper agitation, and within a very few years dresses were worn so short that you cannot only see the shoe, but considerable above the shoe top!

The crowning glory of every woman has been a fine head of hair, and to see one with hair cut led you to believe she was a fit subject for the bug house, but styles change, and our opinions also. A good looking girl with bobbed hair, properly curled, now appears all right.

Now, to show you that styles can come back again, just look at our present flappers, who are again wearing dresses that practically touch the ground.

I mention the above merely to demonstrate that through changes of styles many things become obsolete.

Poor workmanship, however, had considerable to do with it.

3. How do sheet metal cornices compare with stone and terra cotta?

To demonstrate this, I have had an architect prepare a full-sized detail of the cornices, showing crown mould with fillet, facia, plancier, bed mould, frieze and base mould, with a small modillion spaced about 18 inches apart. I am showing you the construction of this cornice, both of sheet metal, stone and terra cotta, and according to the information that I have, the weight of stone cornice per lineal foot is 700 pounds and the cost to erect, including a reasonable profit, is $17 per lineal foot.

Terra cotta of the same style and design will weigh 225 pounds and cost $12.

Made of 26-gauge galvanized iron, including band iron, anchors, etc., it will weigh 6 pounds per foot, and it can be put up at a profit for $5.

This same cornice made of 16-ounce copper can be sold at $7 per foot.

It would be foolish for me to condemn the use of stone for cornices, as we very well know that this is a long lasting material, and it can be chiseled into very fine and accurate mouldings, and ornamental work.

Terra cotta, however, being made considerably the same as brick, and burned, does not have the sharp bends and curves that can be produced with stone. The weight of the above is so much more than if it were made of sheet metal that structures must be built very strong to maintain them.

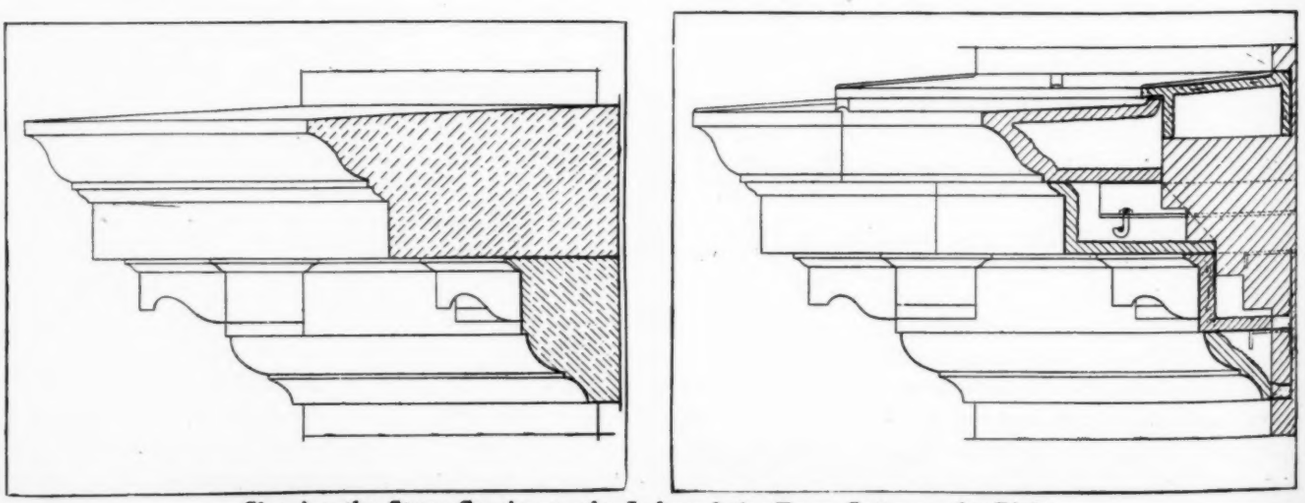
Sheet metal cornices can be made very ornamental, as modillions, brackets, dentils can be produced that will compare very favorably with the best chiseled stone. The lasting qualities of sheet metal, particularly of copper, will compare favorably with either of the other materials.

In case of fire, metal cornices will hold together longer and there is less danger of heavy pieces falling down and injuring passers-by than there is with stone and terra cotta.

4. Is there any advantage in the use of sheet metal cornices to the

Ship A Hoy!

Attention is called to the fact that AMERICAN ARTISAN *for June 28th will carry group photographs of the delegates to the National Sheet Metal Contractors' Convention, Washington, and also photographs of many of the points of interest, including Mount Vernon, visited by the delegates and ladies.*



Showing the Stone Cornice on the Left and the Terra Cotta on the Right.

owners of buildings, and can it be made profitable to the industry?

As stated above, metal cornices can be made much cheaper than stone or terra cotta, and as for durability, they will compare favorably with either of the two. The purchaser is not only getting value for every dollar that is spent; he is assured of fireproof construction, a fire retardent material, and at the same time, saves considerable money.

That it should be profitable for the sheet metal contractor to produce and sell galvanized cornices is very obvious. The making of sheet metal cornices requires considerable labor, both in the shop and outside, and it is only natural to assume that you are making money if your shop is busy and that by employing a good force of men you should make a certain margin of profit on every dollar that you pay out.

5. The last question, I believe, is the most important: What should be done to again have architects specify sheet metal cornices and the owners of buildings to accept them?

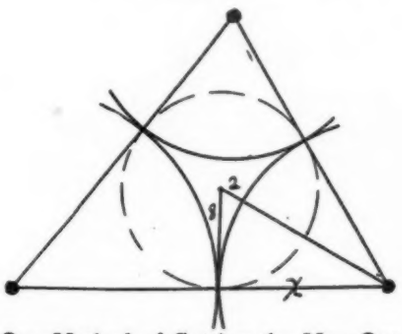
It may be well, with your permission, that I read some of the answers that I received on this. As we can very easily demonstrate that sheet metal is the proper material for cornices, we need not hesitate to publish this fact, and let it be known to the world at large. A proper campaign of publicity, educating both the architect and the owners of buildings, is sure to have the desired results.

We can well afford to spend considerable money in this effort. With the work that is now being done by the Trade Development Committee, and the information that will be given in this book when completed, it will show not only the architect, the owner, but also the sheet metal worker, how cornices should be constructed to make them right in every respect, and if this is followed by other demonstrations, and advertising, the results are sure to come.

I believe that sheet metal cornice committees should be appointed by the National Association of Sheet Metal Contractors, by every state association and next, by every local association. These should all work along the same line, distributing literature and information, and I believe this convention should go on record to take a leading part in this work.

I. C. Vanasdal Helps Frye's Man Out of His Tank Prison.

In answer to the tank problem of Harry Frye appearing in AMERICAN ARTISAN, under date of May 10, 1924, I. C. Vanasdal, 9 North Carpenter Street, Chicago, has worked out a solution whereby the imprisoned man can determine the three diameters in less time than it takes to tell about it.



One Method of Getting the Man Out.

The man has a pocket rule. Mr. Vanasdal would have the man measure the distance from the point of tangency to the center. In the illustration, he has measured this distance and found it to be eight feet. He then creates in his mind's eye lines connecting the center of the three circles and passing through the points of tangency. He then measures the distance from the center of the opening between the tanks to the point on the rim of the tank, whose diameter is being measured where the hypotenuse of the right triangle would pass. This was found to be two feet, as indicated on the sketch.

The object then is to find the base of the right triangle or x in the illustration.

The formula then is:

$x^2 + 64 = (x + 2)^2 =$

$x^2 + 64 = x^2 + 4x + 4 =$

$64 = 4x + 4 =$

$4x = 60; x = 15$ feet.

The process is then duplicated to get the two remaining diameters.

Michigan Outing Trip Plans Progressing Very Well.

All arrangements have been made for the Michigan outing and reservations are coming in satisfactory, according to the latest announcement from F. E. Ederle.

Mr. Ederle states that he has an added assurance of the success of the adventure for no less a reason than the fact that Al Berschback, of Detroit, and Frank Daly, of Jackson, will be on hand.

All those going who have not yet made their reservations should not delay further in doing so.

Notes and Queries

Pure Sheet Aluminum.

From W. J. Parry and Son, 738 Mahoning Avenue, Youngstown, Ohio.

Can you tell us where we can buy sheet aluminum?

Ans.—S. Birkenstein and Sons, 1056 West North Avenue; United Smelting and Aluminum Company, 80 East Jackson Boulevard; Aluminum Company of America, 110 South Dearborn Street, all of Chicago, Illinois.

Double Wall Pipe.

From Gustav Widmaier, Philadelphia, Pennsylvania.

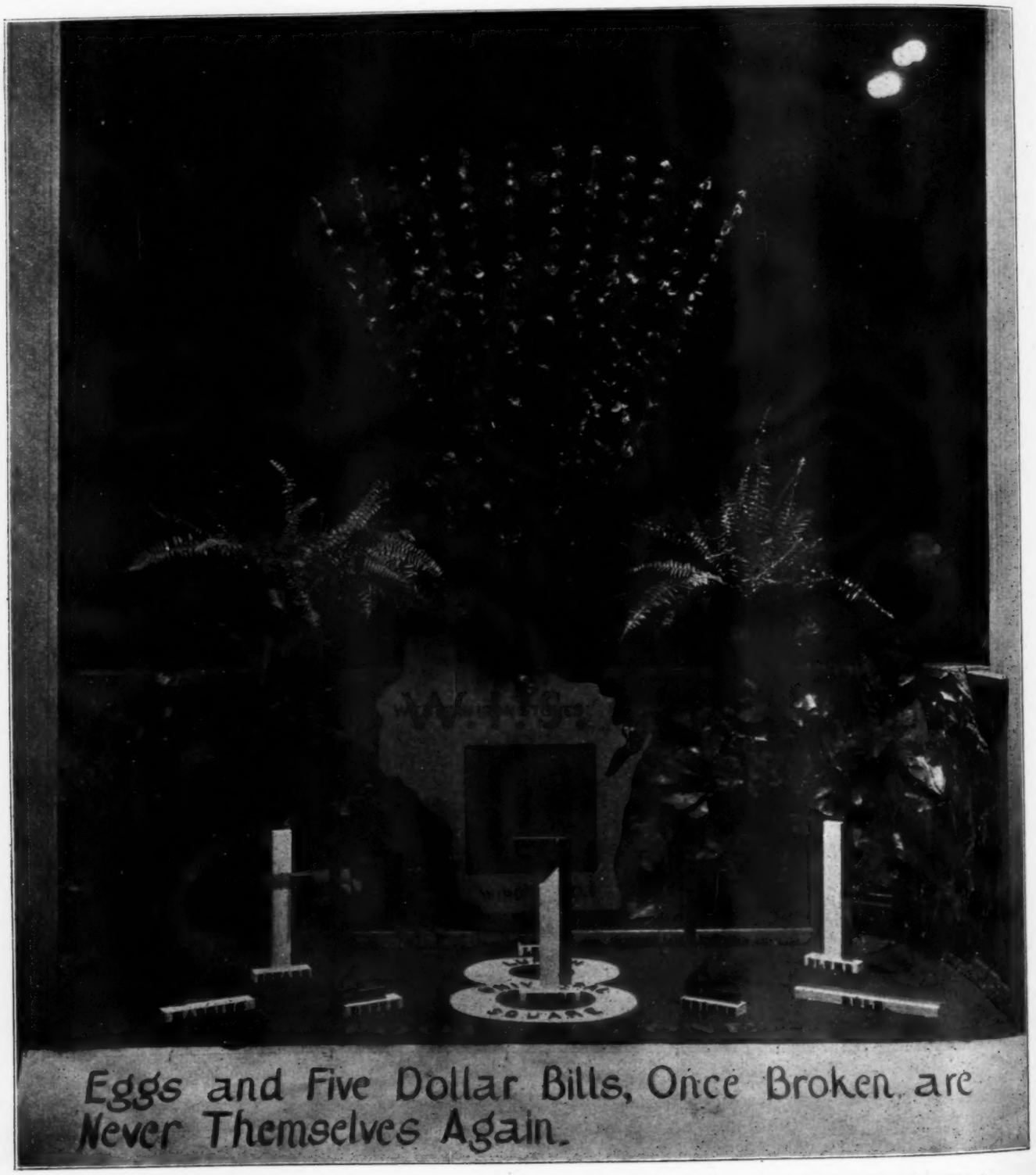
Kindly inform me where I can buy double wall pipe, 2¾-inch thick, outside measurement.

Ans.—L. J. Mueller Furnace Company, 197 Reed Street, Milwaukee, Wisconsin; Chicago Furnace Supply Company, 1278 Clybourn Avenue, Chicago, Illinois; Henry Furnace and Foundry Company, Cleveland, Ohio; Charles Johnson Company, Incorporated, Peoria, Illinois; W. E. Lamneck Company, Columbus, Ohio; F. Meyer and Brother Company, Peoria, Illinois; J. M. and L. A. Osborn Company, Cleveland, Ohio; Dunning Heating Supply Company, 131 Reed Street, Milwaukee, Wisconsin, and Standard Furnace and Supply Company, Omaha, Nebraska.

A "Square Window" That Performed Wonders in Increasing Turnover in Tools.

The Display Is Changed Every Week and Its Power to Produce Sales Is Very Noticeable.

AT THE recent convention of the Illinois Retail Hardware Association the question of what mode of advertising produced the best results brought out some very warm but friendly discussion. Some placed newspaper advertising second and some placed it even further down the list. It is a fact, how-



Window Display of Western Iron Stores Company, Milwaukee, Wisconsin, that Sold 643 Squares in One Week.

ever, that opinion was almost unanimous in delegating first place to window display work.

Some stated that it was best to put price tags in the windows, while others thought it is best to leave them off.

Those in favor of price tags maintained that when a person saw an article priced in the window it made them determine in their own minds that they were willing to pay that price for the article and would then go in and buy. Having sold them the article of their desires, it is then the salesman's job to make them buy more.

There is sound logic in this, and it is a policy which tends to develop superior salesmen from men who would otherwise be mere order takers.

F. J. Prince, of the Western Iron Stores Company, Milwaukee, Wisconsin, has developed a philosophy of his own and has gone a long way toward figuring out a sound psychology of salesmanship.

In the accompanying window display he has shown how he is increasing his turnover by offering a sale on some one tool each week.

Mr. Prince makes the following comment on the window:

"The square shown in the illustration is a new tool on the market and had to be displayed in such a manner as to show its many uses to create a demand.

"The result of this display as a special for one week, December 1st to 8th, was the sale of 643 squares at $1.19, the regular retail price being $1.50.

"We place one tool on sale each week and the scheme is not originated as a price-cutting program, but to enable the firm to increase the number of turnovers of stock and to offer real values in merchandise at a decidedly attractive price.

"The map in the center of the window is our trade mark. Oak sprays and Bosten ferns were used in the background, and larkspur sprays were used on top.

"At the bottom of each window is a beveled space sloping from the edge of the floor to the glass, eight inches deep. A sheet of white paper bearing in easily read lettering a bit of philosophy or timely comments on things in general, having no bearing whatever on the display, but simply on life.

"These lines are changed weekly, as are the displays, so that the show is continually new."

Prepare Now! To Supply Farmers With Their Haying Tool Needs.

Small Town Hardware Merchant a Keen Student of Applied Psychology Whether He Knows It or Not.

THE thought of alfalfa with its slender, blue-flowered, dark green-leaved stalks waving in the summer breezes brings to mind the coming needs of the farmer, to be supplied by the local retail hardware merchant.

The power of suggestion is very strong and when properly harnessed and utilized will work to your advantage in creating sales.

Haying time is approaching. There are hundreds of items that the farmer will need when he comes to overhaul his shed, barn and hay fork rigging. Here a piece of rope, there a new clevis, hither and yon an entire new unloading equipment for the new barn.

Then there are nails of all sizes needed, hammers and screwdrivers, oil cans, sickles, scythes, cradles, scoop shovels, hand hay forks, binder twine, belting, oil.

A familiar sight on the country road these days is the farmer in his flivver scooting towards home over the new concrete highways with the back seat of his car filled with new milk cans in preparation for the summer's yield.

These tools will all be needed in the not far distant future and should be brought to the fore where they can be seen and where they will remind the farmer of his summer needs when he comes to town.

During the busy season farmers do not like to come into town any more often than they are required to. The amount of work to be done is so great that any backwardness in the season makes their harvesting time very short, indeed. Therefore, when they do come to town they are in a buying mood and do not wish to tarry long over the selection of any item. If the articles are placed where they can be seen, they will attract the farmer's eye and remind him of the things he needs.

An instance was noted recently where a farmer had come into town on a Sunday morning to get a handful of screws. It was necessary for him to get the storekeeper, who runs a general hardware and light farm implement store at the outskirts of a small trading center, out of his home nearby to open the store, a practice perhaps not in general favor, but with its uses. Having dished out the handful of screws for the customer, the proprietor very adroitly suggested several other articles which the farmer might have need of. This was all done during the interval in which the proprietor was selecting and wrapping the screws. As he talked, the storekeeper secretly watched the change of facial expression upon the farmer. When he mentioned milk cans he saw an almost imperceptible flicker in the eye of the farmer. Without seeming to halt in his work of wrapping the package, the man behind the counter drew the farmer's attention to the milk cans reposing on the shelf just behind him. The farmer looked up, saw the cans and begin to show signs of interest. The proprietor had him. Milk cans were what the farmer needed, so the man behind the counter proceeded to make little hints about the quality of the milk cans.

The farmer was thinking rapidly. He needed milk cans, but he had not intended to buy them just yet. On the other hand, the work was coming on heavy and he did not know

when he would have an opportunity of getting into town again. So he decided then and there and took twelve of them without further address.

Here was a display of salesmanship of the highest type—creating a sale where there was a need, but no immediate desire to buy. That is a service rendered.

The farmer loaded his cans and screws into his flivver, stepped on the gas and sped home, feeling that he had accomplished a great deal during his trip. He had perfect confidence in the storekeeper. Although he started to town with no definite idea about what he wished to buy, he did know that he needed many things, he was perfectly willing to rely upon the hardware merchant's ability to offer suggestions.

This merchant, although he has only a small store, has a very comfortable home and living and more than that, he has the confidence of his customers. In other words, he has a "going business" with great possibilities.

Who Makes "Mohawk" Lawn Mowers?

To AMERICAN ARTISAN:

Do you know who makes the "Mohawk" lawn mower?

Yours very truly,

C. A. KNOWLES.

Falling Prices Danger Signal to Business.

In a seller's market, such as was explained during the latter part of the world war period, when prices advanced practically without interruption, the rise in prices does not directly wield a very strong influence toward business mortality; nevertheless, the wind is blowing out of the quarter from which whirlwinds are to be expected.

Concerns spring up with little or no margin of protection in the form of capital, hoping to make profits out of inventory-appreciation. Moreover, a great many of them do make money out of price advances on goods they have bought. There was a saying current during the last boom period that "You can't help making money, for everything increases in value on your hands the minute after you buy it." The difficulty here is that a great many firms which formerly made a legitimate profit out of manufacturing or distribution, *i. e.*, a contribution to the common good, are tempted to let their organization and equipment "go to the dogs" because they are making a good profit out of the increasing price level.

During this year of large and easy profits, with credit conditions favorable, the general appearance is one of great prosperity; experience is not necessary, for the continuing advance of prices makes almost every commercial gambler's lottery ticket bear a winning number. But with the passing of the boom period the extraordinary demand for materials disappears and previously necessary reserve stocks are transformed into menacing surpluses. Public consumption is then discovered to be rapidly diminishing, and it quickly becomes evident that the seller's market has vanished and that a buyer's market is a very different thing indeed.

With the first fall in prices failures begin, striking the commercial gamblers first; and as the wave gains momentum through further drops in prices, with credit restrictions becoming increasingly severe, little by little old-line concerns of previously ample resources are drawn into the maelstrom.—*Industrial Digest.*

For One Sale Made by Accident a Dozen are Won by Persistence.

As long as the farmer you are after needs a modern cultivator, can pay for a cultivator, and hasn't bought a cultivator, it is good business for you to keep right after him. His need of the article and his ability to pay for it is the criterion by which you should judge him, and not his unwillingness to place his name on the dotted line.

Often the man who is most reluctant to order is the best business when you do land him. He is going to buy some day, even if he doesn't buy now; and if you let him go without landing his order, somebody else is going to step in and reap the harvest of business where you planted the first seed of salesmanship. It is merely a matter of persistent cultivation—that is all.

Instead of getting discouraged when a farmer persistently turns you down, and turning aside to new and untried prospects, your wise course is to keep after the old prospects persistently and systematically.

Coming Conventions

Iowa Sheet Metal Contractors' Outing, July 12 and 13, 1924, at Waterloo. William Thomson, P. O. Box 513, Mason City, Iowa.

Michigan Sheet Metal and Roofing Contractors' Outing to Quebec, July 19 to 26, 1924. Frank E. Ederle, Secretary, 1121 Franklin Street, S. E., Grand Rapids, Michigan.

Ohio Sheet Metal Contractors' Association, Southern Hotel, Columbus, Ohio, July 22 to 24, 1924. George F. Mooney, Secretary, 213 First National Bank Building, Columbus, Ohio.

Sheet Metal Contractors' Association of Pennsylvania, Pittsburgh, Pennsylvania, July 23, 24 and 25, 1924. W. F. Angermyer, Secretary, 714 Homewood Avenue, Pittsburgh, Pennsylvania.

Pennsylvania & Atlantic Seaboard Hardware Association Convention and Exhibition, February 16 to 20, 1925, at Philedalphia Commercial Museum. Sharon E. Jones, Secretary.

Retail Hardware Doings

California.

A. Horrall, Oakland, formerly located at 6692 Beck Street, has moved his general hardware and paint stock to the new building at 6652 Beck Street. A. Horrall, Jr., a son, will be associated with his father in the new location.

The Midway Hardware Store, 1611 East Anaheim Road, Long Beach, has been damaged by fire.

Illinois.

E. E. Stephens has sold his hardware store on Upper Market Street, Metropolis, to Fred F. Middagh.

Nebraska.

The R. S. Proudfit Company of Lincoln has purchased the hardware store of George W. Green at Bloomington.

The Joseph Laitner Hardware Company of Omaha has moved into new quarters in the Frank Koutsky block at Twenty-fourth and O Streets.

Wisconsin.

H. A. Kohl has sold his hardware business on Superior Street, Antigo, to J. P. Larsen. The store will be known as the Cash Hardware Company.

Pennsylvania Stove Salesmen Make Merry at Evergreen Farms, Philadelphia, June 14.

Young and Old Alike Throw Care to Winds—Rhode Island Clambake Enjoyed.

ALTHOUGH the weather man prophesied showers for Saturday, June 14, the Pennsylvania stove salesmen were favored with a beautiful day for their outing, which was held at the Evergreen Farms, Roosevelt Boulevard, Philadelphia. In spite of the fact that rain was predicted, a large attendance was present; but this may have been due to the optimism of Bill Withers, one of the veterans of the association, who also is a weather expert.

Everyone met at 2025 Arch Street and Joe Evans, Jim McGaw and Andy Rivel placed their cars at the disposal of those who were to join the merry-makers.

A dainty buffet luncheon was served from 12 to 4 o'clock, with an excellent quality of one-half of one per cent on hand to "quench that awful thirst."

The afternoon was spent happily in many ways, such as poker, pinochle, quoits, baseball and the old timers' get-together.

It was a treat to watch the preparations for the genuine Rhode Island clambake. A clambake has only one fault—one gets too much to eat. Those who had been in military service were reminded of tent life, as the tables were placed under a large circus tent and merriment prevailed at every chair.

It so happened that two associations held their outings at the Evergreen Farms, but President Andrew Rivel, who is a fast thinker and worker, made the stove salesmen look distinctive by furnishing each one present with a white skull cap. This made all feel as though they were boys once again and they truly lived up to the old adage: "Men always will be boys." When the last clam had been eaten—about 7 o'clock—all adjourned to the hotel, where they held their usual tete-a-tete until 10 p. m.

We were pleased to see Bill Habicht, who, after a long siege of illness, was well enough to be one of the party. Here's wishing him a speedy and complete recovery.

One of the merry-makers who insisted on keeping on his coat was George Wagoner. He's some boy and a good judge of clambakes.

Jim Black surely knows how to play stud poker and he usually wins, while Fred Sabin is the champion pinochle player.

William G. Withers, Walter T. Hallowell and William F. Habicht, who founded this association on Second Street in 1897, still are active members and never miss any of the functions.

Some of the old-timers present were: Harry Borzell, John Knight, Fred Sabin, George Wagoner, Joe Evans, Bill Abbott and Olly Fagely.

Two prominent figures that were missed at the outing were Joe Bordman and Jim Witherspoon; but we know they were with us in spirit.

One who always is on the job and who has been for many years, is James McGaw, who has been re-elected six times as secretary of the association. He has carried this work to the highest degree of efficiency and those who know "Jim" feel that he cannot be replaced.

Another episode of the association is closed which will go down in its history as one of the many successful events, and the stove salesmen now are looking forward to the 27th annual banquet to be held in December.

At the Left—a Group of Happy Stove Salesmen at Evergreen Farms, Philadelphia. Right, Kneeling—Harry Borzell and Jim Quinn. Standing, left to right—Andy Rivel, Jim McGaw, Bill Habicht, Bill Withers and a Young Man Who Could Pass for Bill Wither's Son.

Go to the Public if You Wish to Sell Stoves.

To sell stoves it is necessary to go to the public. The mail order houses do this with their profusely illustrated circulars. They get trade often because their stock looks—in print—so incomparably superior to the lines carried by local dealers.

Let the local merchant take a leaf out of the mail order book and conduct a campaign along similar lines himself.

Considering the extent of the business involved, it is not an expensive undertaking to send out circulars. In fact, stove manufacturers supply a great deal of advertising literature free of charge to their agents.

These booklets are so arranged in most cases that the dealer can feature his own name more prominently than that of the manufacturer; and consequently are quite as effective as literature prepared by the dealer himself with a view solely to local trade.

Many Believe Business Slump Has Reached the Bottom —Upturn In Stocks.

Capital Now Liquidated, Other Factors Still Inflated—Little Change In Non-Ferrous Metal Prices.

THE rather sharp upturn in both industrial and railroad stocks since Congress adjourned, last Saturday, has caused many to jump to the conclusion that the business slump has reached bottom and that improvement is near at hand. Low money rates, they say, provides a basis for a business revival that may last a year or two.

Unquestionably, cheap money is a favorable factor. It is, however, more an effect than a cause. It is usually the result of business stagnation. Business stagnates because it cannot be conducted profitably. This result is always due to lack of demand for goods at profitable prices.

The factors that make production costs high are wages, prices of materials and supplies, rent, and the price of capital—money rates. The price of capital has now liquidated, but the other factors are still inflated, though the prices of materials and supplies are liquidating slowly. The biggest factor is the wage factor. Until this liquidates either through lower wages or increased efficiency, business is not likely to improve much.

Wage deflation has begun, but it is a slow process, because it must wait on price and rent deflation. To a considerable extent, each is a concomitant of the others. They go up and down together, though prices usually lead and are followed by wages and then rent. All are still inflated as compared with prewar conditions or as compared with conditions in Europe.

Full and permanent business improvement is improbable while these mal-adjustments exist. Meantime, partial and temporary improvement is possible, whenever business becomes unduly depressed, as it may be just now. It may be, however, that business will continue near the present low level for several months. Not unlikely, it will improve and react before the end of the year.

Copper.

Business in the outside copper market was dull. Buyers were reserved and offerings were freer by second hands at concessions with prices entirely nominal. Electrolytic was nominally held at 12.50 cents f.o.b. refinery for prompt, June and July shipment. August was difficult to sell at 12.62½ cents refinery and there was an absence of interest in future positions, prices for which were entirely nominal.

Lake copper was dull and weaker, nominally held at 12.75 cents delivered for early shipment and casting copper was easier at 12.37½ cents f.o.b. refinery.

Tin.

Although the tin market still lacks the support of American consumers, the price continues to advance.

The New York trade are puzzled to find a reason for the strength of the London market for there have been no developments in the business situation in this country to justify higher prices and until recently it has been said that the tin market would be governed by American conditions. Consumers do not show any disposition to follow the market up and during the past two weeks have displayed no buying interest. The market is being kept moving by operations by dealers and some of the local activity is due to the purchases being made here for London account.

Prices are fairly well established at 44.50 cents for Straits tin in all positions although the demand from dealers is chiefly for futures. There is hardly any call for June and July deliveries.

Lead.

The lead market is quotable at from 7 to 7¼ cents New York, the leading interest holding to the lower limit of this range and the independents to the higher. In St. Louis the market is quotable at about 6.95 cents a pound. Sales of June and July at 7 cents St. Louis have been reported.

The general sentiment seems to be rather bullish. Operators are not bidding for futures as freely as they were recently.

Zinc.

Zinc stocks during May increased by 9,586 tons, a greater increase even than had been expected. The total stocks, 42,364 tons, are not particularly large in view of the average monthly shipments so far this year of over 45,000 tons. But with the prospect of diminishing consumption they may become unwieldly unless output is curbed to correspond.

There has been slight improvement in consuming inquiry, but the market is not active.

Solder.

Chicago warehouse prices on solder are as follows: Warranted, 50-50, $28.50; Commercial, 45-55, $27.75, and Plumbers', $26.50, all per 100 pounds.

Tin Plate.

Operation of the tin plate industry at present may be estimated at 65 per cent of theoretical full, against 70 per cent a fortnight ago. The average for May was around 75 per cent.

Thus while there is a decrease of importance, the decrease is not altogether as great as might reasonably have been expected by the middle of June, considering how production was pushed in the first quarter of the year, in order to be

I. C.

TARGET AND ARROW

Trade *Mark*

ROOFING TIN

NOW $25.00 the BOX

Size 28x20 f. o. b. Pittsburgh

For half a century we have been educating Architects and Builders as to the advantages of using HAND MADE Roofing Tin, backed by records of more than 50 years of service on the roof and countless records of roofs 30 years old and still going strong!

As a result, thousands of Architects and Builders freely acknowledge the superiority of Target and Arrow Roofing Tin but too many have hesitated to insist upon its exclusive use due to its higher price.

In order to remove this difficulty and allow Sheet Metal Contractors to fulfil the ever present demand, we have decided to arbitrarily reduce the price of Target and Arrow making it cost but a fraction more than ordinary machine made plates.

There will be no lessening of the quality, no skimping in its manufacture. *It will be made as always—strictly by hand—and 35 minutes will be spent in coating each sheet.*

This is a part of our contribution to the sincere efforts of Sheet Metal Contractors to increase the use of all worthy sheet metal products.

N. & G. TAYLOR COMPANY

PHILADELPHIA

Headquarters for Good Roofing Tin Since 1810

Distributed exclusively through Jobbers located at all prominent points

forehanded in insuring a good supply, and how the weather has been altogether unfavorable to the canning crops, while the general line consumers of tin plate are presumably filled with the very conservative feeling that permeates steel consuming circles generally.

No forecasts are made as to how the tin plate mills will operate in July, but the natural guess is that they will run at a relatively low rate, in view of the stocks.

Mills are now pretty close together in their quotations on export plate, having gone as close to the English equivalent as they feel they ought to go in view of what they consider the greater value of their product in point of quality. A large inquiry for oil plate has been hanging fire for several weeks.

The domestic market remains quotable on the basis of the familiar $5.50 price.

Sheets.

While the sheet trade may be running into better prospects, the record up to date of actual operation shows continued decrease.

Percentages of operation based on turns work do not necessarily agree with actual tonnage outputs. Statistics furnished by 70 per cent of the total sheet capacity showed tonnage output in 1922 4 per cent less, and tonnage output in 1923 4 per cent greater, than the estimated capacity operated. The mills gained 8 per cent in efficiency from one year to the next. Last February the tonnage output of the independent mills reporting was 11 per cent greater than the capacity estimate based on turns worked.

While no official announcement as to prices has thus far been made by the American Sheet & Tin Plate Company and it is fair to assume that no really formal action has been taken, the practical situation is that the leading interest is meeting the independent competition to the extent of giving regular customers a concession of $4.00 a ton from the old prices, on blue annealed, black and galvanized sheets.

The majority of independents are holding to the same level. A few are going farther, more in some cases than others. These extra cuts are pretty well recognized by quoting the market at $1.00 a ton leeway, or at $4.00 to $5.00 a ton under the old prices: Blue annealed, 2.75 cents to 2.80 cents; black, 3.60 cents to 3.65 cents; galvanized, 4.75 cents to 4.80 cents. The great bulk of the tonnage is going at the higher figures, while a very little is going at less than the lower figures. Automobile sheets remain firm at 5.10 cents, without any spread.

Old Metals.

Wholesale quotations in the Chicago district, which should be considered as nominal, are as follows: Old steel axles, $16.75 to $17.25; old iron axles, $24.00 to $24.50; steel springs, $18.00 to $18.50; No. 1 wrought iron, $11.50 to $12.00; No. 1 cast, $16.00 to $16.50, all per net tons. Prices for non-ferrous metals are quoted as follows, per pound: Light copper, 8 cents; light brass, 5 cents; lead, 5 cents; zinc, 3¼ cents, and cast aluminum, 14½ cents.

Pig Iron Movement Developing Larger Sales—Buyers Coming More Rapidly.

Chicago Iron Shows $1 Reduction—Pittsburgh No. 2 Foundry at $19.50—Birmingham Going at $20.

PIG iron prices having fallen to a point where they have become especially attractive, buyers have been coming into the market in increasing numbers placing tonnage in many instances to the year-end. Since the present buying movement began three weeks ago, sales have totaled probably 400,000 tons or more. At Chicago, a reduction of $1 by one seller has resulted in about 100,000 tons being booked the past week.

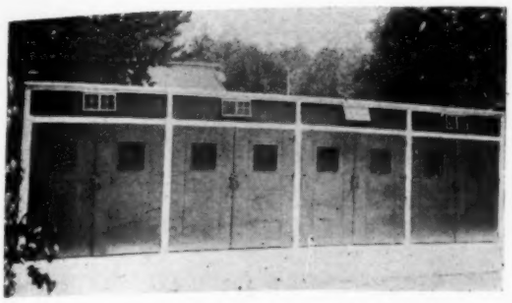
The mid-week reviews of the steel industry disagree as to whether the reaction has run its course and a turn for the better is in sight. The Iron Trade says production no longer is slipping lower, that operations are better and that the belief is growing that the low point has been reached. Operations as a whole are placed at 45 to 50 per cent of capacity and new business is increasing in some lines.

The buying movement of northern foundry and malleable iron is continuing, with prospects that this week's selling may exceed last week's. One producer last week booked approximately 50,000 tons, and before the movement tapers off may almost double this amount. Brokers' sales are comparatively light, because they have little to sell. The movement was inaugurated when a large producer saw inquiry swelling and cut the price $1 to $21, furnace. Some individual sales are in excess of 5,000 tons. Most of the large melters have bought comfortably for the third quarter, while some last quarter business also has been taken. Larger melters are displaying more confidence by buying for forward delivery. Many small foundries still are reluctant to buy iron until orders for castings are secured.

Pig iron quotations are down to $20 and $21, and consumers still are asking for concessions. The recent sale of 20,000 tons of iron to the United States Cast Iron Pipe & Foundry Company is noted, divided between two interests and a sale of 5,000 tons of southern iron to the American Radiator Company did not prove as great a stimulus as anticipated. The greater number of orders are in one and two car lots.

Pressure pipe makers have business which will warrent steady operation through August, and radiator works have been going steadily. The melt of iron by other interests has been more or less spasmodic.

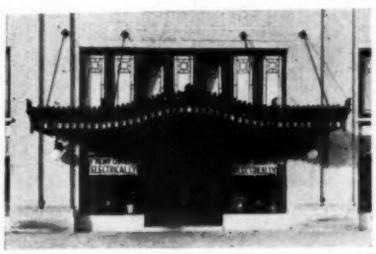
You don't have to be forward to go forward.



Four car portable garage made of Toncan Metal by Jeffery and Mayer, of Newark, N. J. They are doing a splendid business with Toncan in this line, as well as in their general sheet metal work.

New shop of T. W. Binnix and Bro., Washington, D. C. Sheet and metal work Toncan. Toncan quality has enabled them to secure a lot of government work and recently brought them a $1,500.00 contract for balcony and other work on a big apartment.

Heidman and Leet, of Maryville, Mo., are selling quantities of Toncan Metal hog waterers and chicken waterers. In addition they are doing a good general sheet metal business. A folder issued by them three or four times a year helps to boost sales.



Eye winker marquise made of Toncan Metal by Harry T. Klugel, of North Emporia, Va. Mr. Klugel has specialized in marquise until he has acquired almost a national reputation. The marquise shown above was for the West Texas Utilities Building, Abilene, Texas.

Ventilators of Toncan Metal ready for erection by the Burkett Sheet Metal Works of Hattiesburg, Mo. Architectural sheet metal work of all kinds comes your way when you handle a long lived, moderate priced, dependable material like Toncan.

The Way to Bigger Business

Trough, pipe, gutter, valley, flashing—an occasional repair or special job that's back-log business—helps keep the pot boiling.

But the ambitious, progressive, modern sheet metal man doesn't stop there. He knows that the way to big business means more work and a broader field.

Specialties—that's one good way. Develop something of sheet metal which fills a need in your territory then push that specialty, advertise it, SELL it, and with it you can increase your regular business.

This specialty may fit into some local industry or activity like tobacco handling or maple sugar production. It may be some line of general utility like tanks and troughs, or it may be some architectural specialty like marquise.

However, the big field to be conquered for yourself and the industry is the field of roofing, siding, cornice, etc., where substitutes have too often crept in and crowded out sheet metal. The field has been partly lost because of low grade, light gauge, short lived sheets. It has been won back in many places with good materials like Toncan Metal and aggressive, enthusiastic, hard-hitting *salesmanship.*

Toncan Metal advertising and prestige will help you to land the regular business.

Toncan for specialties, works better, lasts longer, helps in selling.

Toncan roofing lasts, prevents fire, gives lightning protection, helps you to get the business.

May we tell you about our proven sales plan and cost-free advertising material? They are getting results for hundreds of dealers. Ask us about them.

UNITED ALLOY STEEL CORPORATION, CANTON, OHIO

TONCAN METAL
Commercially pure iron alloyed with copper to obtain the greatest possible resistance to rust and corrosion.

TONCAN METAL
THIS IRON WILL ENDURE

U-LOY STEELS
Special analysis and alloy steels made to your specifications or ours for any required purpose

MADE BY THE OLDEST AND LARGEST PRODUCERS OF HIGH-GRADE ALLOY STEEL

UNITED ALLOY STEEL CORPORATION

Chicago Warehouse Prices on Hardware and Metals.

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

METALS

PIG IRON.

Chicago Foundry.. 21 00
Southern Fdy. No. 2 .....26 01 to 27 01
Lake Sup. Charcoal 29 04
Malleable 21 00

FIRST QUALITY BRIGHT TIN PLATES.

IC	14x20	112 sheets	$12 45
IX	14x20	.....	14 05
IXX	14x20	56 sheets	17 57
IXXX	14x20	.....	18 12
IXXXX	14x20	.....	18 65
IC	20x28	112 sheets	27 50
IX	20x28	.....	29 85
IXX	20x28	56 sheets	16 15
IXXX	20x28	.....	17 20
IXXXX	20x28	.....	18 25

TERNE PLATES

			Per Box
IC 20x28, 40-lb.	112	sheets	$25 60
IX 20x28, 40-lb.	"	"	28 50
IC 20x28, 30-lb.	"	"	21 80
IX 20x28, 30-lb.	"	"	24 70
IC 20x28, 25-lb.	"	"	20 80
IX 20x28, 25-lb.	"	"	23 70
IC 20x28, 20-lb.	"	"	18 30
IV 20x28, 20-lb.	"	"	21 15
IC 20x28, 15-lb.	"	"	17 05
IC 20x28, 12-lb.	"	"	15 75
IC 20x28, 8-lb.	"	"	14 05

COKE PLATES.

Cokes, 80 lbs., base, 20x28. $13 85
Cokes, 90 lbs., base, 20x28. 14 10
Cokes, 100 lbs., base, 20x28. 14 45
Cokes, 107 lbs., base, IC 20x28 ..... 14 85
Cokes, 135 lbs., base, IX 20x28 ..... 17 40
Cokes, 155 lbs., base, 56 sheets 9 75
Cokes, 175 lbs., base, 56 sheets 10 65
Cokes, 195 lbs., base, 56 sheets 11 70

BLUE ANNEALED SHEETS.

Base 10 ga. .....per 100 lbs. 3 90

ONE PASS COLD ROLLED BLACK.

No. 18-20.....per 100 lbs. $4 50
No. 22-24.....per 100 lbs. 4 55
No. 26.....per 100 lbs. 4 60
No. 27.....per 100 lbs. 4 65
No. 28.....per 100 lbs. 4 70
No. 29.....per 100 lbs. 4 75

GALVANIZED.

No. 16.....per 100 lbs. $4 85
No. 18-20.....per 100 lbs. 5 00
No. 22-24.....per 100 lbs. 5 15
No. 26.....per 100 lbs. 5 30
No. 27.....per 100 lbs. 5 45
No. 28.....per 100 lbs. 5 60
No. 30.....per 100 lbs. 6 10

BAR SOLDER.

Warranted.
50-50 .....per 100 lbs. 28 50
Commercial.
45-55 .....per 100 lbs. 27 75
Plumbers .....per 100 lbs. 26 50

ZINC.

In Slabs 5 90

SHEET ZINC.

Cask lots, stock, 100 lbs.... 11 00
Less than cask lots, 100 lbs. 11 50

BRASS.

Sheets, Chicago base 18¼c
Mill Base 16¼c
Tubing, brazed, base.....23½c
Wire, base 16¼c

COPPER.

Sheets, Chicago base.....20c
Mill base 19¼c
Tubing, seamless, base.....22c
Wire, No. 9 & 10 B. & S. Ga. 16¼c
Wire, No. 11, B. & S. Ga..16¼c

LEAD.

American Pig 7 12½
Bar 8 50
Sheet.
Full Coils ....per 100 lbs. 11 25
Cut Coils ....per 100 lbs. 11 50

TIN.

Pig Tin .....per 100 lbs. 44 12½
Bar Tin .....per 100 lbs. 45 62½

HARDWARE, SHEET METAL SUPPLIES, WARM AIR FURNACE FITTINGS AND ACCESSORIES.

ADZES.

Coopers'.
Barton's .....Net
White's .....Net

AMMUNITION.

Shells, Loaded, Peters.
Loaded with Black Powder 18%
Loaded with Smokeless Powder 18%
Winchester.
Smokeless Repeater Grade .....20 & 4%
Smokeless Leader Grade .....20 & 4%
New Club .....20 & 4%
Black Powder .....20 & 4%
U. M. C.
Nitro Club .....20 & 4%
Arrow .....20 & 4%
New Club .....20 & 4%
Gun Wads—per 1000.
Winchester 7- 8 gauge 10&7½%
" 9-10 gauge 10&7½%
" 11-28 gauge 10&7½%

ASBESTOS.

Paper up to 1/16.....6c per lb.
Rollboard .....6¼c per lb.
Millboard 3/32 to ½....6c per lb.
Corrugated Paper (250 sq. ft. to roll)....$6.00 per roll

AUGERS.

Boring Machine .....40&10%
Carpenter's Nut 50%
Hollow.
Stearns, No. 4, doz.....$11 50
Post Hole.
Iwan's Post Hole and Well 35%
Vaughan's, 4 to 9 in....$15 60

AXES.

First Quality, Single Bitted (unhandled), 3 to 4 lb., per doz.....$14 00
Good Quality, Single Bitted, same weight, per doz. 13 00

BARS, CROW.

Steel, 4 ft., 10 lb.....$ 80
Steel, 5 ft., 18 lb..... 1 40
Pinch Bars, 5½ ft., 24 lb..... 1 60

BARS, WRECKING.

V. & B. No. 12.....$0 30
V. & B. No. 24..... 0 42
V. & B. No. 324..... 0 57
V. & B. No. 30..... 0 48
V. & B. No. 330..... 0 63

BITS.

All Vaughan and Bushnell.
Screw Driver, No. 30, each $ 30
Screw Driver, No. 1, each 18
Reamer, No. 80, each..... 45
Reamer, No. 100, each.... 45
Countersink, No. 13, each... 23
Countersink, Nos. 14-15, each 30

BLADES, SAW.

Wood.
Atkins 30-in.

Nos.	6	40	26
	$3 90	$9 45	$5 40

BLOCKS.

Wooden 45%
Patent 45%

BLOW TORCHES (See Firepots).

BOARDS.

Stove.	Per Doz.
Crystal, 33"	$23 90

Wash.
No. 760, Banner Globe (single) .....per doz. $5 25
No. 662, Banner Globe (single) .....per doz. 6 75
No. 801, Brass King, ... per doz. 8 25
No. 860, Single—Plain Pump 6 25

BOLTS.

Carriage.
Small, roll thread....50-10-5%
Small and Large cut thread 50-5%
Machine.
Small, roll thread.....60-5%
Small, cut thread.....50-10-5%
Stove 70-5%

BRACES, RATCHET.

V. & B. No. 444, 8 in.....$4 54
V. & B. No. 222, 8 in..... 3 89
V. & B. No. 111, 8 in..... 3 55
V. & B. No. 11, 8 in..... 3 02

BRUSHES.

Hot Air Pipe Cleaning.
Bristle, with handle, each $0 85
Flue Cleaning.
Steel Only, each.....$1 25

BURRS.

Copper Burrs only.....40%

BUTTS.

Steel, antique copper or dull brass finish—case lots—
3½x3½—per dozen pairs $3 66
4x4..... " " " 4 92
Heavy Bevel steel inside sets, case lots—
.....per dozen sets 7 80
Steel bit keyed front door sets, each 1 90
Wrought brass bit keyed front door sets, each..... 3 25
Cylinder front door sets, each 7 50

CEMENT, FURNACE.

American Seal, 5 lb. cans, net$ 45
" " 50-lb. cans, " 90
" " 25 lb. cans, " 2 00
Asbestos, 5 lb. cans, net.... 45
Pecora .....per 100 lbs. 7 51

CHAINS.

⅜ in. proof coil chain, per 100 lbs. $8 50
American coil chain....40 & 10%

CHIMNEY TOPS.

Iwan's Complete Rev. & Vent. 30%
Iwan's Iron Mountain only..35%
Standard .....30 to 40%

CHISELS.

Cold.
V. & B. No. 25, ¼ in., ea. $0 26
V. & B. No. 25, ⅜ in., ea. 38
Diamond Point.
V. & B. No. 55, ¼ in.... 0 32
V. & B. No. 55, ½ in.... 0 45
Firmer Bevelled.
Round Nose.
V. & B. No. 65, ¼ in..... 0 33
V. & B. No. 65, ½ in..... 0 45
Socket Firmer.
Cape.
V. & B. No. 50, ⅜ in..... 0 31
V. & B. No. 50, ¾ in..... 0 62

CHUCKS, DRILL.

Goodell's, for Goodell's Screw Drivers .....List less 35-40%
Yankee, for Yankee Screw Drivers $6 00

CLAMPS.

Adjustable.
No. 100, Door (Stearns) doz. $22 00
Carpenter's.
Steel Bar..List price plus 20%
Hose.
Sherman's brass, ¾-inch per doz. $0 48
Double, brass, ¾-inch, per doz. 1 20

CLINKER TONGS.

Front Rank, each.....$1 75
Per doz. 18 00

CLIPS.

Damper.
Acme, with tail pieces, per doz. $1 35
Non Rivet tail pieces, per doz. 35

COPPERS—Soldering.

Pointed Roofing.
3 lb. and heavier....per lb. 40c
2½ lb. ..... " 45c
2 lb. ..... " 48c
1½ lb. ..... " 55c
1 lb. ..... " 60c

CORD.

No. 7 Std. per doz. banks..$10 75
No. 8 " " " " 12 30

CORNICE BRAKES.

Chicago Steel Bending.
Nos. 1 to 6B.....10%

COUPLING HOSE.

Brass .....per doz. $2 20

CUT-OFFS.

Kuehn's Korrekt Kutoffs:
Galv., plain, round or cor. rd.
Standard gauge 40%
26 gauge 10%

DAMPERS.

"Yankee" Hot Air.
7 inch, each 20c, doz.....$1 75
8 " " 25c, " 2 40
9 " " 30c, " 2 75
10 " " 32c, " 3 00
Smoke Pipe.
7 inch, each.....$ 35
8 " " 40
9 " " 50
10 " " 60
12 " " 90
Reversible Check.
8 inch, each.....$1 50
9 " " 1 70

DIGGERS.

Post Hole.
Iwan's Split Handle (Eureka)
4-ft. Handle..per doz. $14 00
7-ft. Handle..per doz. 36 00
Iwan's Hercules pattern, per doz. 14 90

DRILLS.

V. & B. Star, 12-inch Length.
¼, 5/16 and ⅜, each....$ 27
⅝, each 38
1, each 57
1¼, each 85
V. & B. Star, 18-inch Length.
⅜, each .....$ 35
⅝, each 47
1, each 72
1¼, each 1 10

EAVES TROUGH.

Milcor .....
Galv. Crimpedge, crated...75%

ELBOWS—Conductor Pipe.

Milcor .....
Galv., plain or corrugated, round flat.
Crimp, Std. gauge.....65%
26 Gauge 40%
24 Gauge 10%
Square Corrugated.
Milcor .....
Standard gauge 50%
26 gauge 30%
Portico Elbows.
Standard Gauge Conductor Pipe, plain or corrugated.
Not nested .....70 & 5%
Nested solid .....70 & 5%

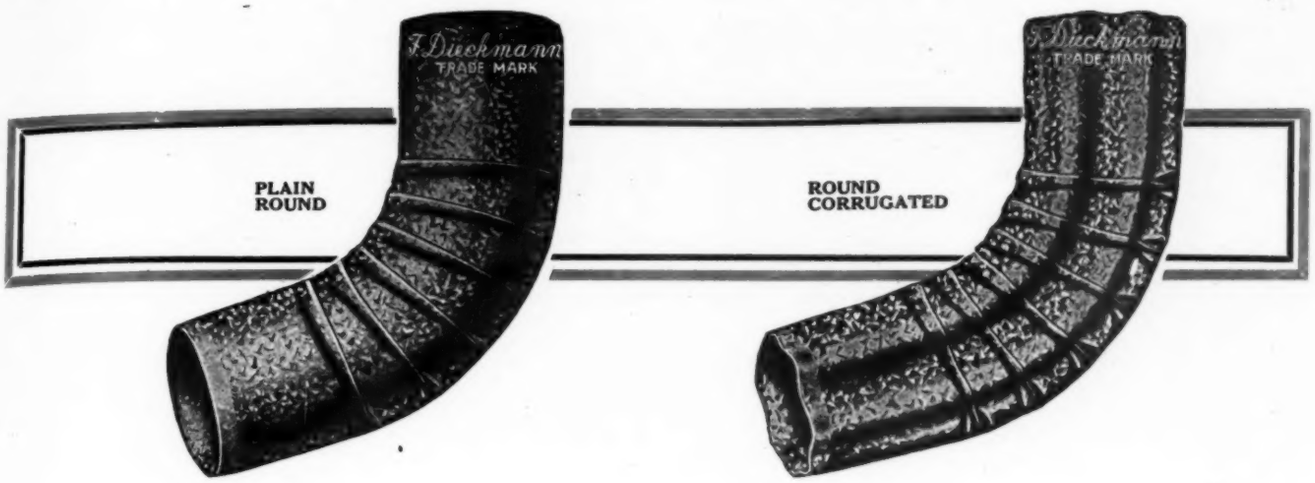
ELBOWS—Stove Pipe.

1-piece Corrugated. Uniform.

	Doz.
5-inch	$1 40
6-inch	1 80
7-inch	2 00

Special Corrugated.

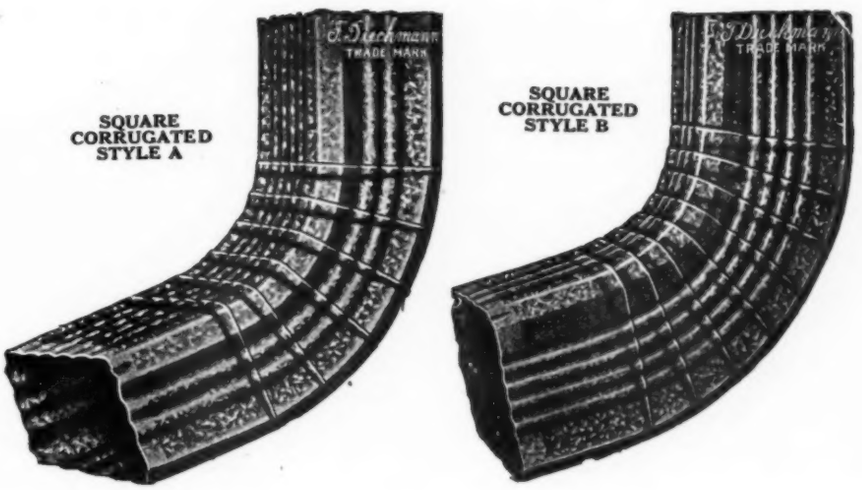
	Doz.
6-inch	$1 35
7-inch	1 65



Elbows that save time and make money for you on every job

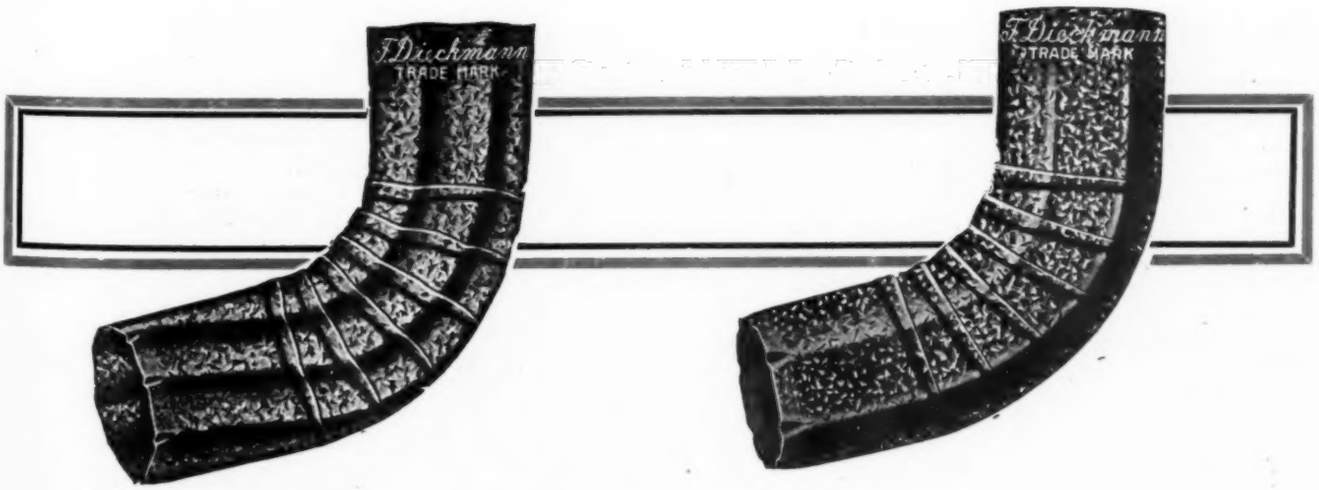
TRADE MARK
F. Dieckmann

THIS trade mark is stamped in the back of each Elbow and Shoe along with the gauge and name of material—look for it—it is your guarantee that you are getting the genuine F. Dieckmann Specified brand—the favorite with thousands of sheet metal contractors for over fifty years.



The Ferdinand Dieckmann Co.

P. O. Station B ***Cincinnati, Ohio***



Uniform, Collar Adjustable.

	Doz.
5-inch	$2 00
6-inch	2 10
7-inch	2 60

WOOD FACES—50% off list.

FENCE.

Field Fence 61½%
Lawn " 53%

FILES AND RASPS.

Heller's (American) 50-10%
American 60-10%
Arcade 60%
Black Diamond 40-10-5%
Eagle 50%
Great Western 50%
Kearney & Foot 50%
McClellan 50%
Nicholson 50%
Simonds 60%

FIRE POTS.

Ashton Mfg. Co.
Complete line Firepots and Torches.... 52%

Otto Bernz Co.
No. 1 Furn. Gasolene with large shield, 1 gal..... $ 6 75
No. B Furn. Kerosene, 1 gal. 15 12
No. 10 Brazier, Kerosene or Gasolene, 10 gals... 47 52
No. 5 Torch, Gasolene or Kerosene, 1 pt..... 7 92
No. 83 Torch, Gasolene, 1 quart 5 40
No. 86 Torch, Gasolene, 1 pint 4 05

Clayton & Lambert's.
East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Nebraska, Kansas, Oklahoma, Amarillo, San Angelo and Laredo, Texas 52%
West of above boundary line 48%

Geo. W. Diener Mfg. Co.	Ea.
No. 02 Gasolene Torch, 1 qt.	$ 5 55
No. 0250, Kerosene or Gasolene Torch, 1 qt...	7 50
No. 10 Tinners' Furn. Square tank, 1 gal.....	12 60
No. 15 Tinners' Furn. Round tank, 1 gal.....	12 00
No. 21 Gas Soldering Furnace	3 60
No. 110 Automatic Gas Soldering Furnace	10 50

Double Blast Mfg. Co.
Gasolene, Nos. 25 and 35...60%

Quick Meal Stove Co.
Vesuvius, F.O.B. St. Louis 30%
(Extra Disct. for large quantities)

Chas. A. Hones, Inc.	
Buzzer No. 1	$ 9 00
" " 2	12 00
" " 22	13 50
" " 42	15 00
" " 43	19 00

FREEZERS—ICE CREAM.

Peerless and Alaska	
1 quart	$2 95
2 quart	3 45
3 quart	4 10
White Mountain	
1 quart	$4 85
2 quart	5 65

GALVANIZED WARE.

Pails (Competition), 8 qt.	$1 95
10-qt.	2 20
12-qt.	2 46
14-qt.	2 75
Wash tubs, No. 1	$6 00
No. 2	6 85
No. 3	8 00

GARAGE DOOR HARDWARE.

Stanley ..... All net

GAUGES.

Marking, Mortise, etc..... Nets

Wire.
Disston's 25%

GIMLETS.

Discount ..... 65% and 10%

GLASS.

Single Strength, A and B. all sizes ..... $3 & 85%
Double Strength, A, all sizes 84%

GREASE, AXLE.

Frazers'	
1-lb. tins, 36 to case, per case	$ 4 70
3-lb. tins, 24 to case, per case	7 80
5-lb. tins, 12 to case, per case	7 20
10-lb. tins, per dozen	10 40
15-lb. tins, per dozen	13 80
25-lb. tins, per dozen	19 80

HAMMERS, HANDLED

All V. and B.	Each, net
Blacksmiths' Hand, No. 0, 26-oz.	$0 87
Engineers' No. 1, 26 oz.	87
Farrier's, No. 7, 7-oz.	90
Machinists', No. 1, 7-oz.	64

Nail.

Vanadium, No. 41, 20-oz. each	1 42
Vanadium, No. 41½, 16-oz., each	1 42
V. & B., No. 11½, 16-oz., each	92
Garden City, No. 111¼, 16-oz., each	69
Tinner's Riveting, No. 1, 8-oz., each	71
Shoe, Steel, No. 1, 13-oz. each	71

Tack.
Magnetic.
No. 5, 4-oz., each..... 78

HAMMERS, HEAVY.

Farrier's, No. 10, 10-oz....$1 01

HANDLES.

Axe.	
Hickory, No. 1....per doz.	4 00
Hickory, No. 2.... "	3 00
1st quality, second growth	6 00
Special white, 2nd growth	5 00

Chisel.
Hickory, Tanged, Firmer assorted .....per doz. 55c
Hickory, Socket, Firmer, Assorted .....per doz. 70c

File .....per doz. $1 20

Hammer and Hatchet.
No. 1 per doz.....$0 90
Second Growth hickory, per doz. 1 50

Soldering.
Per doz. $2 40

HANGERS.

Conductor Pipe.
Milcor Perfection Wire....25%

Eaves Trough.
Steel hangers 30%
Triple Twist wire.....10%
Milcor Eclipse Wire.....20%
Milcor Triplex Wire.....15%
Milcor Milwaukee Extension.15%
Milcor Steel (galv. after forming) List plus 12½%
Milcor Selflock E. T. Wire, List plus 40%

HASPS.

Hinge, Wrought, with staples. Net

HATCHETS.

V. & B. Supersteel.	Each
Broad, No. 1, 24-oz.	$1 53
Half, No. 1, 15-oz.	1 33
Half, No. 3, 27-oz.	1 44
Claw, No. 1, 19-oz.	1 38
Flooring, No. 1, 20-oz.	1 53
Shingling, No. 1, 17-oz.	1 28
Lathing, No. 1, 14-oz.	1 28
Lathing, No. 2, 17-oz.	1 33

Vanadium Steel.

Half, No. 2, 22-oz.	$1 04
Underhill Pattern Lathing, 9 row, 19-oz.	2 14

HINGES.

Heavy Strap, in Bundles.	
4 inch, dozen prs.	$1 26
5 " " "	1 74
6 " " "	2 12
8 " " "	3 54

Extra Heavy T in Bundles.	
4 inch, dozen prs.	$1 90
5 " " "	2 01
6 " " "	2 52
8 " " "	4 20

HOES.

Garden .....net

HOOKS.

Box.
V. & B. No. 1, each.....$0 26

Conductor.
Milcor .....
"Direct Drive" Wrought Iron for wood or brick 15%

Hay.
V. and B. No. 1, each.. 26

Bar Meat.
V. and B. No. 26, ⅝", each 09
V. and B. No. 28, ½" each 16

Screw Meat.
V. & B. No. 2, per gro... 7 15

Butchers' "S."
V. & B. No. 6, each..... 09
V. & B. No. 8, each..... 13

HOSE.

	Per Ft.
⅝-in. 2 ply molded..	12c
⅝-in. cord	8½c to 10c
¾-in. wrapped	14c

HUMIDIFIERS.

"Front-Rank," Automatic.
In single lots 50%
In lots of 10 or more....50-5%
In lots of 25 or more..50-10%
Vapor pans, etc., each.....50%

IRONS.

Sad.	
Genuine Mrs. Potts, nickel plated, per set	$1 55
Asbestos No. 70, per set.	2 10
Asbestos No. 100, per set.	2 30

E. C. Stearns'.	
No. OA Corner, doz. sets.	$2 50
No. OB " " "	2 75

KNIVES.

Butcher.
Beechwood Handles, 6-inch blade 25%
Beechwood Handle, 7-inch blade 25%
Beechwood Handles, 3-inch blade 25%

Cooper's Hoop 25%

Drawing.
Standard 25%
Adjustable 25%
Barton's Carpenters' 25%

Hay.
Iwan's Solid Socket.....25%
Heath's 25%
Iwan's Sickle Edge.....25%
Iwan's Imp'd Serrated....25%

Hedge.
Challenge 25%
Disston's No. 1.....25%

Putty.
Common 25%
Lander's 25%

Scraping.
Beech Handles 25%
Lander's 25%

KNOBS.

Door.	
Mineral .....per doz.	$2 00
Porcelain ..... "	2 00
Jet ..... "	2 00

LADDERS.

Step.
Common, per ft.....28c
Common, with Shelf, add 10c
IXL 34c
Challenge, 6 to 9 ft.....55c
10 to 16 ft.....60c
Kant-Break, per lineal ft....75c

LANTERNS.

	Per doz.
Monarch tin, hot blast	$ 8 25
Dietz No. 2 cold blast	13 00
Best tubular	8 25
Competition lanterns No. 0 tubular	6 90

LAWN MOWERS.

12-inch	$5 20
16-inch	5 85

Ball Bearing.
4 blade, adjustable bearing.

14"	$5 20
16"	7 80

LEATHER BELTING.

From No. 1 Oak Tanned Butts.
Extra heavy, 18-oz.....35%
Heavy, 16-oz. 40%
Medium, 14½-oz. 40%
Light, 13-oz. 50%

LEATHER LACING.

Cut, strictly No. 1.....45%

LEVELS.

Disston, No. 28 Asst.	$22 05
" No. 18, 20 in., each	1 38
" No. 22, 24 in., each	2 40
" Shafting, 6 in.	19 80
" " 6 in. gr. glass	24 30
" No. 1 Asst.	5 75
" No. 3 Asst.	12 40
" 24-26 in., each	1 02
" 28-30 in., each	1 00

LIFTERS.

Stove Cover.	
Coppered .....per gro.	$6 00
Alaska ..... "	4 75

LOCKS.

Barn Door.	
No. 60 Stearn's..per doz.	$11 00
No. 80 " "	20 00

MALLETS.

Carpenters'.	
Fibre Head No. 2, per doz.	$12 00
" No. 3, "	15 50
" No. 3½, "	20 50
Round Hickory, per .....doz.	$3.00— 5 00

Tinners'.	
Hickory .....per doz.	$2 25

MATS.

Door.
National Rigid .....5 & 10 & 5%
Acme Steel Flexible 50%

MITRES.

Galvanized steel mitres, and caps, end pieces, outlets...30%
Milcor .....
Galv. one piece stamped....40%

MOPS.

Cotton, Star (Cut Ends).

Pounds	12'	15'	18'	24'-3-ex.
Per doz.	$4 00	4 35	5 50	7 00

Enterprise 16⅔%
Parker .....50 & 5%

NAILS.

Cut Steel $4 55

Cut Iron 4 55

Wire.
Common 3 65
Cement Coated 3 00

NETTING, POULTRY.

Galvanized before weaving 45-10%
Galvanized after weaving 45%

NIPPERS.

Nail Cutting.
V. & B. No. 30.....78c

Double Duty.
V. & B. No. 64.....$1 02

NOZZLES.

Hose.	
Diamond .....per doz.	$5 75
Magic ..... "	9 80

OILERS.

Chase Pattern.
Brass and Copper.....10%
Zinc Plated .....40 & 5%

Railroad.
Brass .....20 & 5%
Coppered .....50 & 5%

Steel.
Copper Plated .....70 & 5%

OPENERS.

Delmonico .....per doz.	$1 30
Never Slip ..... "	60

Crate.
V. & B., per doz. $7 25—11 00

Send that rush order for—

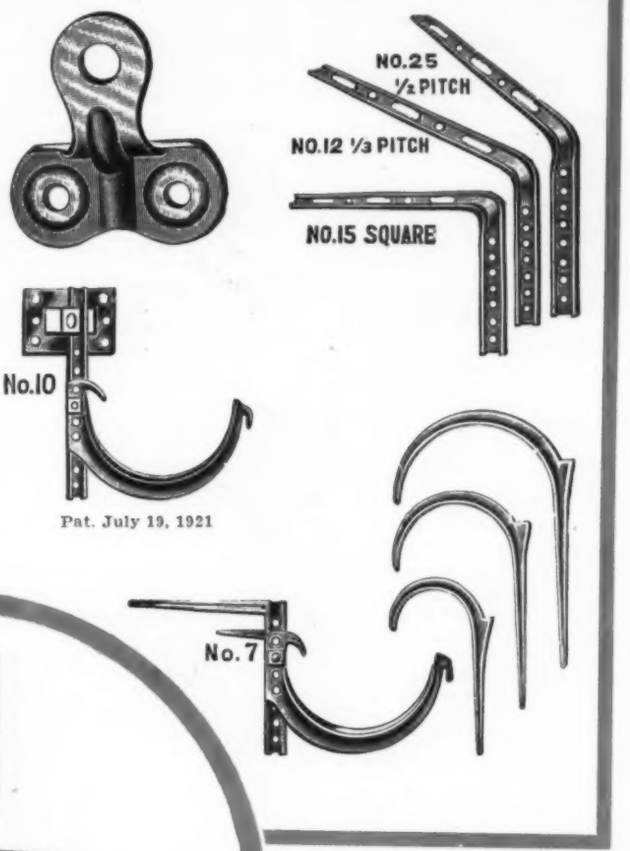
IT makes no difference what supplies or tools you are in a hurry for—if it's used or sold by Sheet Metal Contractors we have it *in stock*. Just send your rush orders to us and rely on us to fill them to your utmost satisfaction.

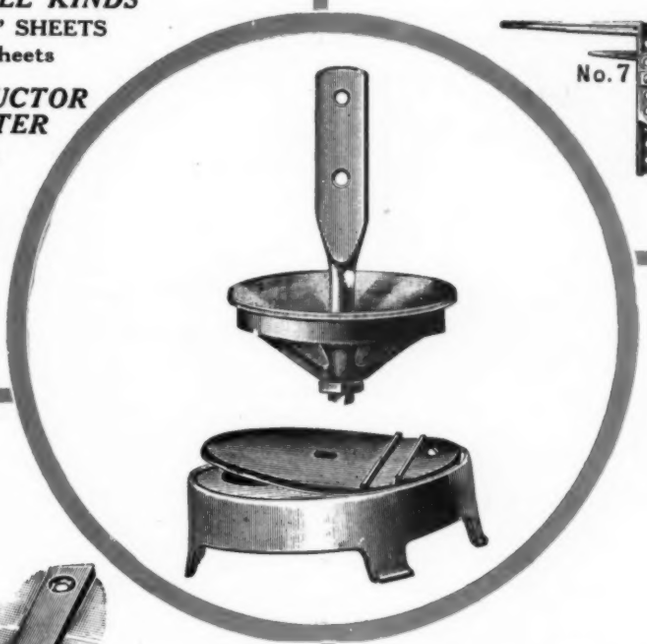
We are manufacturers as well as jobbers and our stocks of Sheet Metal Supplies of all kinds are the largest and most complete in the country.

SHEET METALS OF ALL KINDS
"ARMCO" AND "TONCAN" SHEETS
Copper, Zinc and Lead Sheets

"SHUR-LOCK" CONDUCTOR PIPE—"E-Z" FIT GUTTER
"PARKER" PRODUCTS
Skylights—Ventilators

PECK, STOW & WILCOX'S
Tinners' Machines and Tools
Warm Air and Stove Pipe
FIRE POTS
ROOFING SUPPLIES





Sheet Metal Contractors' Headquarters

WE have been Sheet Metal Contractors' Headquarters for many years and besides the articles illustrated and listed on this page you can secure from us practically every item known to the trade.

We have an interesting catalog of over 200 pages which not only illustrates and describes supplies we make and handle, but shows interior views of our manufacturing plants and describes our service in detail. Write for a copy of Catalog No. 9.

Berger Brothers Service, Quality and Fair Prices have built up this business. Place your next order with us.

BERGER BROS. COMPANY

229-231-233-235-237 Arch Street

Warerooms and Factory
100 to 114 Bread Street
PHILADELPHIA, PA.

PAILS.

Cream.
14-qt., with gauge, ...per doz. $9 50
18-qt. without gauge, ...per doz. 11 00
20-qt., without gauge, ...per doz. 11 75

Sap.
10-qt., IC Tin....per doz. $4 00
12- " " " " 5 50

Stock.
Galv. qts. 14 16 18 20
Per doz. $9 75 10 75 12 75 14 50

Water.
Galvanized qts. 10 12 14
Per doz. $5 75 6 50 7 25

PASTE.

Asbestos Dry Paste:
200-lb. barrel.....$15 00
100-lb. barrel..... 8 00
35-lb. pail 3 25
10-lb. bag 1 00
5-lb. bag 55
2½-lb. cartons 30

PINCERS.

All V. and B.
Carpenters', cast steel, No. .. 6 8 10 12
Each $0 45 $0 55 $0 64 $0 74
Blacksmiths', No. 10.....$0 75

PIPE.

Conductor.
"Interlock" Galvanized.
Crated and nested (all gauges) 60-20%
Crated and not nested (all gauges) 60-15%
Square Corrugated A and B and Octagon.
29 gauge 60-10%
28 " 60-10%
26 " 60-10%
24 " 60-10%

"Interlock."
Crated and nested (all gauges 60-20%
Prices for Galvanized Toncan Metal, Genuine O. H. Iron, Lyonmore Metal and Keystone C. B. on application.

Stove. Per 100 joints
26 gauge, 6 inch E. C. nested 17 00
26 gauge, 7 inch E. C. nested 19 00
28 gauge, 5 inch E. C. nested 14 00
28 gauge, 6 inch E. C. nested 15 00
28 gauge, 7 inch E. C. nested 17 00
30 gauge, 5 inch E. C. nested 12 00
30 gauge, 6 inch E. C. nested 13 00
30 gauge, 7 inch E. C. nested 15 00
T-Joint Made up 6-inch, 28 ga. ...per 100 32 50

Furnace Pipe.
Double Wall Pipe and Fittings 40-10%
Single Wall Pipe, Round Pipe Fittings 40-10%
Galvanized and Black Iron Pipe, Shoes, etc..40-10%
Milcor Galvanized 40%
Lead.
Per 100 lbs.....$10 25

PLANES.

Stanley Iron Bench .....Net

PLIERS.

(V. & B.)
Nut, No. 3, each.....$ 60
" No. 25, each..... 69
Gas, No. 7, each..... 55
" No. 8, each..... 61
" No. 12, each..... 87
Button's Pattern.
No. 6 each..... 61
No. 8 each 74
Double Duty, No. 106..... 48

POINTS, GLAZIERS'.

No. 1, 2 and 3..per doz. pkgs. 65c

POKERS, STOVE.

Wr't Steel, str't or bent, ...per doz. $0 75
Nickel Plated, coil handles ..... " 1 10

POKERS, FURNACE.

Each $0 50

PULLEYS.

Furnace Tackle....per doz. $0 60
per gross 6 00
" Screw (encased)....per doz. $0 85

Ventilating Register.
Per gross $9 00
Small, per pair 0 30
Large, per pair 0 50

PUNCHES.

Machine.	Each
V. & B. No. 11-13, 1½x6	$0 21
V. & B. No. 90, ⅝x9	30
V. & B. No. 10, ¾x10	33
V. & B. No. 1-6, ½x6	14

Center.
V. & B. No. 50, ⅜x4.....$0 15

Belt.
V. & B. No. 101-103.....$0 27
V. & B. No. 106-107..... 33
V. & B. No. 110-112..... 42

Samson Line.
No. 1 Hand — Doz. lots or less 40%
No. 2 Hand — 3 doz. lots ...Less 40 & 5%
No. 4 Hand — 6 doz. lots or more—Less 50%
No. 3 Bench — Less than doz. lots ...Less 25%; Doz. lots or more..Less 40%

Extra Punches and Dies for Samson:
No. 1 Hand — Less than doz. lots...Less 25%
No. 2 Hand — Doz. lots, ...Less 33⅓%
No. 4 Hand — 3 doz. lots, ...Less 40%
No. 3 Bench — 6 doz. lots or more, ..Less 40 & 10%

PUTTY.

Commercial Putty, 100-lb. kits $3 55

QUADRANTS.

Malleable Iron Damper.....10%

FLOOR REGISTERS AND BORDERS.

Cast Iron 25%
Steel and Semi-Steel.....40%
Baseboard 40%
Adjustable Ceiling Ventilators 40%
Register Faces—Cast and Steel.
Japanned, Bronzed and Plated, 4x6 to 14x14 .....40%
Large Register Faces—Cast, 14x14 to 38x42 .....60%
Large Register Faces—Steel, 14x14 to 38x42.....65%

ROOFING.

	Per Square
Best grade, slate surf. prep'd	$2 00
Best talc surfaced.....	2 35
Medium talc surfaced.....	1 65
Light talc surfaced.....	1 05
Red Rosin Sheeting, per ton.	62 00

ROPE.

Cotton.
Sisal.
1st Quality, base...14½ to 16½c
No. 2 .....13½ to 15½c
Manila.
1st Quality standard brands .....17½ to 19½c
No. 2 .....16½ to 18½c
Hardware Grade, per lb....14½c

SAWS.

Butchers'.
Atkins No. 2, 14-in.....$12 75
" No. 2, 18-in..... 14 30
" No. 7, 16-in..... 15 85
" No. 2, 22-in..... 15 92
" No. 7, 20-in..... 18 05
" No. 7, 24-in..... 20 20
" No. 7, 28-in..... 22 35

Compass.
Atkins No. 2, 10-in.....$ 5 45
" No. 10, 10-in..... 5 60
" Blades, No. 2, 10-in. 3 25
" " No. 2, 10-in. 3 30

Cross-Cut.
Atkins No. 221, 4-ft.....$3 03
" No. 221, 6-ft..... 4 45
" No. 221, 8-ft..... 6 07

Hand.
Copper Burrs only.....40%
" No. 96, 20 in..... 21 70

Hand and Rip.
Atkins No. 54, 20-in.....$19 50
" No. 54, 26-in..... 24 40
" No. 53, 16-in..... 18 10
" No. 53, 20-in..... 22 90
" No. 53, 24-in..... 26 60
" No. 53, 28-in..... 31 45
" No. 53, 30-in..... 34 15

Keyhole.
Atkins No. 1 complete....$3 10
" No. 2 complete.... 3 70

Miter Box.
Atkins No. 1, 4x20.....$32 65
" No. 1, 5x22..... 38 00
" No. 1, 6x22..... 42 20

Pruning.
Atkins No. 20, 12-in.....$ 8 45
" No. 10, 16-in..... 18 15

Wood.
Atkins No. 202.....$ 7 19
" No. 318..... 8 75
" No. 906..... 15 50
" No. 1509..... 16 56

SCRAPERS.

Box.
No. 6, six blade each.....35c
Hog.
No. 6, each.....27c
Floor (Stearns).
No. 10, each $11 50

SCREEN DOOR HINGES

Cast Iron .....gross $13 00
Steel ..... " 9 50

SCREWS.

Wood.
F. H. Bright.....80-5%
R. H. Blued 78-5%
F. H. Jap'd 74-5%
F. H. Brass 76-5%
R. H. Brass 74-5%
Sheet Metal.
No. 7, ½x½, per gross....$0 55
No. 10, ¾x3/16, per gross 75
No. 14, ⅞x¼, per gross... 90

SCREW DRIVERS.

Uncle Sam Standard Head.
2 inches, each .....$ 45
5 inches, each 52
8 inches, each 68
12 inches, each 1 02
Uncle Sam Insulated Head.
3 inches, each.....$ 49
5 inches, etch..... 57
8 inches, each..... 76
12 inches, each..... 1 14

SETS.

Nail.
V. & B.
No. 100, in cardboard boxes .....doz. $1 46
No. 100, in wooden boxes, ... Doz. 1 53
No. 5, in cardboard boxes, ... doz. 1 31
No. 5, in wooden boxes, ... doz. 1 37

Rivet.
Farmers' $0 19
Tinners' 3-4 ..... 0 40
" 00-0..... 0 60
Saw.
Atkins No. 10....per doz.$3 80
" No. 12.... " 6 30

SHEARS.

	Per Doz.
Nickel Plated, Straight, 6"	$12 90
" " " 7"	14 85
" " " 8"	16 80
Japanned, Straight....6"	11 00
" " ....7"	13 40
" " ....8"	15 80

SHEARS, TINNERS' & MACHINISTS'.

Viking $32 00
Lennox Throatless.
No. 18 .....35%
Shear blades 10%
(f. o. b. Marshalltown, Iowa.)
Peerless Steel Squaring.
Foot Power.
No. 1—30", 18 ga. cap.....15%
No. 2—36", 18 ga. cap.....15%
No. 4—52", 18 ga. cap.....15%
No. 10—120", 22 ga. cap..15%
No. 4A—52", 16 ga. cap....15%
Cast Iron Foot Power.
No. 01, 30", 18 ga. cap....15%
Power Driven.
(No. 100 Series, 2 Shaft Drive.)
No. 142—42", 18 ga. cap...15%
(No. 200 Series, 2 Shaft Underneath Drive.)
No. 242—42", 14 ga. cap...15%
(No. 300 Series, 2 Shaft Underneath Drive.)
No. 342—42", 10 ga. cap...15%
No. 372—72", 10 ga. cap... 15%
(No. 500 Series, 2 Shaft Underneath Drive.)
No. 596—96", 10 ga. cap...15%
No. 600 Series, 3 Shaft Underneath Drive.)
No. 6120—120", 3/16" cap..15%

SHOES.

Milcor.
Galv. Std. Gauge, Plain or corg. round flat crimp...65%
26 gauge round flat crimp..40%
24 gauge round flat crimp.10%
Conductor 65%

SHOVELS AND SPADES.

Coal.
Hubbard's.

No.	A	B	C	D
1	$16 00	15 10	14 45	13 70
2	16 35	15 60	14 85	14 10
3	16 75	16 00	16 25	14 40
4	17 10	16 35	16 60	14 85

Post Drains & Ditching.
Hubbard's.

Size	A	B	C
14"	$17 15	$16 40	$15 65
16"	17 50	16 75	16 00
18"	17 85	17 10	16 35
20"	18 20	17 45	16 70
22"	18 55	17 80	17 05

Alaska Steel.
D-Handle .....per doz. $3 50
Long Handle ..... " 3 00

SIFTERS.

Genuine Hunters, doz.....$2 50

SKATES.

Ice, Men's and Boys'.	Per Pair
Key Clamp—rocker—bright finish .....$	76
Key Clamp—rocker—nickel finish	1 10
Key Clamp—rocker — polsteel	1 35
Key Clamp—rocker — polSkate outfits	4 75
Women's and Girls'.	
½" Key Clamp—rocker....$	1 21
" " " hockey..	1 33
Ice Skate outfit.....	5 00
Roller.	
Ball Bearing—Boys' .....$	1 45
Copper Burrs only.....	30%
Ball Bearing—Girls'	1 55